Northwest Atlantic Fisheries Organization

Serial No. N6030 **NAFO SCR Doc. 12/006**

SCIENTIFIC COUNCIL MEETING – JUNE 2012

Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2011

by

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Abstract

Since 2003, a stratified random summer bottom trawl survey was conducted by Spain in the NAFO Regulatory Area of Division 3L (Flemish Pass). The surveys were carried out by the R/V *"Vizconde de Eza"* using bottom trawl net type *Campelen*. Entire series of mean catches, biomass and length distribution for Greenland halibut, American plaice and witch flounder are presented for the period 2003-2011. Greenland halibut biomass and abundance estimates show a decrease in the latest year; which represent one of the lowest values of the series. American plaice biomass has a slight increase this year. Regarding witch flounder, the biomass and abundance decreased in 2011, but there is no a clear trend in the period 2003-2011.

KEYWORDS: Survey, Flemish Pass, Greenland halibut, American plaice, witch flounder.

Material and Methods

The Spanish surveys in Div. 3L of NAFO Regulatory Area (Flemish Pass) were initiated in 2003. The Research vessel *"Vizconde de Eza"* has carried out this surveys following the same procedures and using the same bottom trawl gear *Campelen 1800*. In 2003, the survey was carried out in spring (June) and it did not cover all strata adequately (69% of the total area prospected in 2006-2011). In 2004, the survey was carried out in August, for a period of nine days, and it covered only the 96%. In 2005, it was not possible to perform the survey due to problems with the winch of the ship; and in 2006, for the first time, an adequate prospecting survey was conducted in Division 3L with over 100 valid hauls. Table 1 presents the number of valid tows, the depth strata covered and the dates of the survey series. Figure 1 shows haul positions of the Spanish surveys in NAFO Div. 3L in the period 2003-2011.

The survey area was stratified following the standard stratification schemes (Bishop, 1994). All surveys had a stratified random design following NAFO specifications (Doubleday, 1981). Hauls were allocated to strata proportionally to stratum size, with a minimum of two planned hauls per stratum and the trawl positions were chosen at random. A synoptic sheet of the survey with the vessel and gear characteristics is shown in Table 2. Biomass and abundance indices were calculated by the swept area method (Cochran, 1997), assuming catchability factor of 1.

The catch from each haul was sorted out and weighted by species and a randomly selected sample of each species was taken in order to measure it and to obtain the length distribution. For Greenland halibut, American plaice and witch flounder, each individual of the sample was measured to the total length to the nearest lower cm. and data are given in 2 cm intervals. We present on a yearly basis: the mean catch per haul, the stratified mean catch per haul, the biomass with its variance per year and the length distribution in number per haul stratified mean catches by length, sex and year for each species in the period 2003-2011.

Biological studies (age, growth, feeding,..), oceanographic data and special studies (occurrence of marine mammals and sea birds) were collected from NAFO Regulatory area Div. 3L during the survey aboard *Vizconde de Eza*. The following formula was used to obtain the biomass from length distribution: Weight=a (Length+0.5)^b .

Stratified mean catches and SD

The mean catch ($\overline{y}_i$) and the variance (Var_i) are calculated by stratum by the following formulas:

$$\overline{y}_i = \sum_{j=1}^{T_i} \frac{y_j}{T_i}, \quad i = 1,...,h$$

$$Var_i = \sum_{j=1}^{T_i} \frac{(y_j - \overline{y}_i)^2}{T_i - 1}, \quad i = 1,...,h$$

where:

y_j is the catch in haul j

T_i is the number of hauls in the stratum i

h is the total number of strata

and the stratified mean catch ($\overline{y}_i^{str}$) and the stratified variance (Var_i^{str}) by stratum are obtained as follow:

$$\overline{y}_i^{str} = \overline{y}_i n_i, \quad i = 1,...,h$$

$$Var_i^{str} = Var_i \frac{n_i^2}{T_i}, \quad i = 1,...,h$$

where:

n_i is the area of the stratum i , $i = 1,...,h$

Then the total stratified mean catch ($\overline{Y}$) and the variance (Var) by year are calculated according to the formulas:

$$\overline{Y} = \sum_{i=1}^{h} \frac{\overline{y}_i^{str}}{N}$$

$$Var = \sum_{i=1}^{h} \frac{Var_i^{str}}{N^2}$$

where:

$N = \sum_{i=1}^{h} n_i$ is the total area by year

The stratified standard deviation (SD) by year is calculated as the square root of the stratified variance by year.

Results

In 2011, the bottom trawl survey in Div. 3L (Flemish pass) of NAFO Regulatory Area was carry out on board R/V *Vizconde de Eza* using the usual survey gear (*Campelen 1800*) from July 10th to August 24th and following the same procedure as in previous years. A total of 90 hauls (1 of them null) were performed in a depth range of 115-1419 m. (Table 1).

Biological studies

Biological data (length, sex, sexual maturity, weight and stomach repletion degree) on 9 target species and other 27 species were collected from Div. 3L in 2011 (17477 individuals sampled).

Age and Growth – 437 samples for histological maturity and fecundity of Greenland halibut, roughhead grenadier American plaice and *Anarhichas lupus* were taken. Also otoliths (1251 samples) of Greenland halibut, American plaice, roughhead grenadier and cod were collected for growth studies.

Feeding studies were performed on some demersal species (*Synaphobrachus kaupi, Notacanthus chemnitzii, Hydrolagus affinis* and *Harriotta Raleighana*) and 307 stomach contents were analysed from depths of 342 to 1419 m.

Hydrographic Studies

Temperature and salinity were measured in each haul by means of CTD ((SBE Se 25 SEALOGGER CTD). Hydrographic profile samplings were performed at 84 fishing stations in a depth range of 107-1381 m.. The minimum and maximum observed temperatures were 0.7426 and 4.4424 ºC respectively and the observed salinity range was 33.4557 - 34.9008 PSU. Results are presented in MEDS (Marine Environmental Data Service of Canada) every year.

Special studies

Benthic invertebrate

The study of benthic invertebrates was performed as a routine work during the survey (catch in weight and number, photographs and collection for study in the laboratory). This study will help us to have more knowledge about these species and their relation to the marine environment in the surveyed area.

Marine mammals and sea birds

Observations and incidental catches of marine mammals occasionally occurred were recorded during fishing time in the surveyed area of Flemish Pass. Occurrence, date, position, number, Tª, fishing time and other data were collected related to marine mammals throughout the survey. 24 observations of 3 marine mammals species (*Physeter macrocephalus, Globicephala melas* and *Hyperoodon Ampullatus*) were recorded.

Regarding seabirds, information about species, and incidental catches was also collected in the surveyed area. This will help us get a better understanding of these species, their relation to the marine environment and the interaction of seabirds with fishing. 9 species of sea birds (*Fulmarus glacialis, Puffinus gravis, Puffinus grisseus, Wilson´s Storm-petrel, Morus bassanus, Catharacta skua , Larus marinus, Sercorarius parasiticus and Sterna sp*) were observed in this year.

Results for Greenland halibut, American plaice and witch flounder are presented in this report. The results for the rest of target species will be presented in other SCR in this SC meeting. The detailed results for Northern shrimp, the most abundant species in the catches of all surveys, were presented in Casas *et al*., 2011.

Greenland halibut (*Reinhardtius hippoglossoides* Walbaum, 1792)

The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1. Abundance and biomass indices were available from research vessel surveys by Canada in Div. 2J+3KLMNO (1978-2011), EU in Div. 3M (1988-2011) and EU-Spain in Div. 3NO (1995-2011). Greenland halibut is managed under a fifteen year rebuilding programme that started in 2004.

Catches increased sharply in 1990 due to a developing fishery in the NAFO Regulatory Area in Div. 3LMNO and continued at high levels during 1991-94. The fishable biomass declined to low levels in 1995-97 due to very high catches and high fishing mortality. It increased during 1998-2000 due to greatly reduced catches, much lower fishing mortality and improved recruitment. Biomass increased over 2004-2008 with decreased in fishing mortality. The current estimates (2004-2011) of fishable biomass are amongst the lowest in the series. Recent recruitment has been below average, and fishing mortality remains high (NAFO, 2011).

Mean catches and biomass

Table 3 shows the swept area, the tow number, the mean catches and their variance per haul and year for Greenland halibut. Table 4 and Figure 2 present the stratified mean catches per stratum with the total variance per year. Table 5 and Figure 3 present the abundance, the biomass per swept area per stratum and their total variance per year. Table 6 presents the length-weight relationships.

The biomass of the Greenland halibut has had an increase in the surveyed area along the whole period, mainly in 2008. However, this year it has decreased, reaching the same level as in 2006. The biomass presents the same trend as mean catches since the year 2004. In 2003, the mean catch does not follow the same pattern; this was probably due to the less area covered in 2003 survey (Figures 2 and 3).

Length distribution

Table 7 and 8 present the stratified mean catches per haul length distribution for the Greenland halibut, by sex and year, with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In Figures 4 and 5 the evolution along the years can be followed.

A good recruitment can be observed in the whole period, mainly in 2006; although the number of individuals of length over 70 cm. is very low. Biomass and stratified mean catch increased in 2007, but the number of individuals per stratified mean catches decreased, due to the good recruitment in 2006. The same process happened in 2009 and 2010. The highest recruitment was in 2006, as observed in Fig. 4, with 14 cm length classes mode.

American plaice (*Hippoglossoides platesoides* Fabricius, 1780)

There was no fishing targeting American plaice in 1994 and it has been under moratorium since 1995. Catches increased after the moratorium until 2003 and began to decline afterwards. Biomass and SSB remain low compared to historic levels. SSB declined to the lowest estimated level in 1994 and 1995. It has increased since then but it still remains very low. There has been no good recruitment to the exploitable biomass since the mid-1980s (NAFO, 2011).

Mean catches and biomass

American plaice haul mean catches by stratum are presented in Table 9, including swept area, number of hauls and SD. Stratified mean catches per tow by stratum and year and their variance are presented in Table 10.

The entire time series (2003-2011) of biomass and their SD estimates of American plaice are shown in Table 11. Length-weight relationships are presented in Table 6.

The American plaice indices showed a general increasing trend in the prospected area since 2004 (Fig. 6 and 7). But in 2010 this increasing trend was broken and the value was below the 2006 value, following by an increase in 2011.

The highest values in the estimated biomass have been observed in the shallowest strata, in a range of depth from 93 to 274 meters.

Length distribution

Tables 12 and 13 present the stratified mean catches per haul length distribution by sex and year. They present also the number of samples in which length measurements were performed, the total number of individuals measured in these samples, the sampled catch and the range of lengths found. The total catch of this species and the total valid hauls made in the survey are shown too. In Figures 5 and 8 the evolution along the years can be followed.

For this species, there is quite good presence of small individuals (around 10-16 cm) since 2006. There is a higher proportion of females than males.

Witch flounder (*Glyptocephalus cynoglossus* Linnaeus, 1758)

Witch flounder stock has remained at a low level since 1995. However, a slight increasing trend in the total stock survey biomass index has been observed since 2003 but it remains at a very low level. In the past this stock had been fished mainly in winter and springtime on spawning concentrations but is no only a bycatch of other fisheries. No directed fishing on witch flounder is recommended in Div. 3L (NAFO, 2011).

Mean catches and biomass

Table 14 shows the swept area, the tow number, the mean catches and their variance per haul and year for witch flounder. Table 15 and Figure 9 present the stratified mean catches per stratum with the total variance per year. Table 16 and Figure 10 present the abundance and biomass per swept area per stratum and their total variance per year. Parameters *a* and *b* estimated values of length-weight distribution are presented in Table 6.

Witch flounder indices show no clear trend throughout the period 2003-2010, the index peaked in 2010. However, biomass declined again in 2011. Estimated biomass ranged from 691 t in 2010 to a 297 t and 298 t in 2003 and 2007 respectively; although most estimate results come from few strata. The stratified mean catches per stratum followed similar trends as the biomass and abundance indices (Fig. 9 and 10).

Length distribution

Table 17 and 18 present the stratified mean catches per haul length distribution for this species, by sex and year, with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In Figures 5 and 11 we can follow the evolution along the years.

The highest recruitment was in 2003, but since then the number of younger individuals have declined.

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TABLE 1.- Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2011.

Year	Vessel	Valid tows	Depth strata covered (m)	Surveyed strata (no.)	Dates
2003	R/V *"Vizconde de Eza"*	39	118-1100	17	June 2 - June 6, June 29
2004	R/V *"Vizconde de Eza"*	50	141-1452	23	August 7 - August 15
2005	-	-	-	-	-
2006	R/V *"Vizconde de Eza"*	100	116-1449	24	July 31 - August 18
2007	R/V *"Vizconde de Eza"*	94	119-1449	24	July 23 - August 11
2008	R/V *"Vizconde de Eza"*	100	105-1455	24	July 24 - August 11
2009	R/V *"Vizconde de Eza"*	98	111-1458	24	July 25 - August 12
2010	R/V *"Vizconde de Eza"*	97	119-1462	24	July 25 - August 14
2011	R/V *"Vizconde de Eza"*	89	115-1419	24	August 10 - August 24

TABLE 2.- Technical data of the Spanish survey in NAFO Division 3L for the period 2003-2011.

Procedure	**Specification**
Vessel	R/V *"Vizconde de Eza"*
GT	1400 t.
Power	1800 HP
Surveyed area	Div. 3L (depth < 1500 m, outside ZEE Canada)
Mean trawl speed	3 knots
Trawling time	30 minutes effective time
Fishing gear type	*Campelen 1800*
Headline	29.5 m
Groundrope	19.5 m
Type of groundrope	34 rockhopper
Floats	(2 x 39) + 10
Bridle	40 m (20 mm)
Vertical opening	4-5
Horizontal opening	26
Trawl doors	Polyvalent, 1400 Kg
Warp	20 mm
Warp to depth ratio	22.287 * Depth (m)$^{0.6667}$
Mesh size in the cod-end	44 mm
Type of survey:	Stratified random bottom trawl survey
Criterion to change position of a selected tow	Unsuitable bottom for trawling according to commercial fish information or ecosonder register. Information on gear damage from previous surveys.
Criterion to reject data from tow	- Severe tears in the gear - tears in cod-end - Less of 20 minutes tow - Bad behaviour of the gear
Daily period for fishing	6.00 to 22.00 hours
Target species	Greenland halibut, American plaice, Atlantic cod, roughhead grenadier, witch flounder, thorny skate, red fish, black dogfish, northern shrimp.

TABLE 3.- Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011. n.s. means stratum not surveyed.

Stratum	2003 (*)				2004				2006				2007			
	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0225	2	0.000	0.000	0.0229	2	6.025	7.814	0.0229	2	15.721	8.173	0.0225	2	16.750	6.293
387	0.0229	2	15.890	6.661	0.0214	2	65.550	13.930	0.0225	2	52.500	4.950	0.0225	2	31.050	6.576
388	0.0334	3	20.870	13.452	0.0105	1	42.700	-	0.0566	5	47.424	8.026	0.0563	5	50.036	21.899
389	0.0454	4	0.459	0.507	0.0225	2	5.770	1.796	0.0795	7	32.941	14.261	0.0900	8	37.473	14.697
390	0.0563	5	0.020	0.029	0.0345	3	0.000	0.000	0.1249	11	12.967	16.007	0.1350	12	6.454	10.772
391	0.0338	3	0.313	0.369	0.0218	2	5.710	4.398	0.0450	4	17.633	5.302	0.0450	4	15.750	5.063
392	0.0116	1	12.500	-	0.0214	2	15.600	10.607	0.0229	2	6.900	3.111	0.0225	2	42.350	34.153
729	0.0210	2	34.860	7.552	0.0221	2	30.500	3.394	0.0338	3	24.120	9.552	0.0338	3	24.695	4.326
730	0.0221	2	24.400	5.798	0.0221	2	7.650	2.616	0.0326	3	8.403	6.415	0.0225	2	4.840	3.620
731	0.0229	2	36.350	2.758	0.0233	2	27.260	3.338	0.0341	3	16.643	6.408	0.0338	3	31.299	16.813
732	0.0113	1	43.100	-	0.0210	2	11.050	0.778	0.0334	3	6.570	3.380	0.0338	3	9.847	3.027
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	18.233	2.495	0.0454	4	18.556	8.530	0.0338	3	24.610	12.655
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	20.567	11.620	0.0225	2	4.478	1.340	0.0225	2	4.639	1.940
741	0.0113	1	27.200	-	0.0323	3	11.517	6.225	0.0218	2	5.648	0.583	0.0225	2	4.590	6.491
742	0.0116	1	31.800	-	0.0120	1	31.100	-	0.0229	2	10.593	1.453	0.0225	2	4.728	1.503
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	8.765	10.090	0.0225	2	4.750	6.718	0.0225	2	10.925	2.185
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	7.500	-	0.0229	2	10.520	9.588	0.0218	2	28.770	21.835
745	0.0341	3	11.000	8.296	0.0319	3	12.933	1.026	0.0686	6	7.227	3.098	0.0675	6	8.536	4.108
746	0.0446	4	29.503	16.252	0.0338	3	9.533	5.315	0.0675	6	5.672	4.188	0.0664	6	6.965	6.921
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.507	0.443	0.1230	11	4.328	5.447	0.1238	11	5.519	6.837
748	0.0109	1	13.700	-	0.0199	2	6.375	5.056	0.0326	3	3.428	4.404	0.0338	3	6.460	6.984
749	0.0221	2	8.540	4.016	0.0221	2	6.550	9.263	0.0229	2	4.250	6.010	0.0113	1	4.010	-
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	10.041	12.221	0.0679	6	9.362	16.847
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s	n.s	0.0454	4	4.570	5.958	0.0225	2	20.400	15.981

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

TABLE 3 (cont).- Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011. n.s. means stratum not surveyed.

	2008				2009				2010				2011			
Stratum	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0229	2	18.011	17.521	0.0225	2	4.975	0.318	0.0225	2	1.250	1.768	0.0229	2	13.100	18.526
387	0.0435	4	46.511	13.072	0.0439	4	33.070	21.146	0.0458	4	23.848	6.951	0.0450	4	12.053	6.860
388	0.0559	5	31.870	17.546	0.0555	5	13.421	9.628	0.0570	5	19.602	14.676	0.0563	5	8.313	4.980
389	0.0780	7	42.616	22.552	0.0803	7	19.759	12.838	0.0795	7	10.144	8.949	0.0675	6	11.408	7.061
390	0.1395	12	5.138	7.236	0.1373	12	1.561	3.604	0.1249	11	0.168	0.535	0.1009	9	0.272	0.682
391	0.0454	4	22.882	4.673	0.0458	4	4.841	3.069	0.0454	4	6.375	7.709	0.0458	4	2.492	2.592
392	0.0221	2	11.370	3.210	0.0229	2	13.289	8.925	0.0225	2	10.390	2.673	0.0229	2	14.425	3.910
729	0.0338	3	17.887	7.697	0.0341	3	24.099	8.265	0.0338	3	20.733	6.933	0.0338	3	9.022	8.348
730	0.0323	3	40.777	14.460	0.0338	3	30.067	18.658	0.0334	3	20.463	2.567	0.0334	3	7.777	1.600
731	0.0330	3	42.527	10.506	0.0341	3	22.403	5.724	0.0338	3	39.567	9.874	0.0334	3	4.090	4.112
732	0.0446	4	42.878	42.441	0.0450	4	48.133	5.976	0.0450	4	56.683	13.345	0.0454	4	21.440	9.450
733	0.0431	4	31.780	5.015	0.0450	4	36.692	27.661	0.0450	4	37.143	30.058	0.0454	4	10.543	4.091
734	0.0221	2	7.603	1.948	0.0218	2	58.850	16.051	0.0225	2	32.400	18.102	0.0225	2	11.243	0.457
741	0.0210	2	7.005	5.961	0.0221	2	35.435	26.962	0.0225	2	29.235	15.450	0.0218	2	19.255	22.267
742	0.0210	2	14.420	16.150	0.0214	2	38.950	16.334	0.0225	2	57.540	42.936	0.0225	2	11.545	4.320
743	0.0203	2	6.460	2.531	0.0203	2	24.204	23.895	0.0225	2	49.975	30.399	0.0221	2	23.185	0.813
744	0.0221	2	23.345	16.553	0.0210	2	31.190	28.864	0.0229	2	49.185	42.052	0.0221	2	25.710	28.100
745	0.0555	5	20.900	19.813	0.0559	5	29.738	14.643	0.0563	5	32.666	9.796	0.0446	4	26.923	10.448
746	0.0638	6	56.842	58.887	0.0668	6	23.069	23.422	0.0679	6	41.340	32.988	0.0566	5	14.369	8.047
747	0.1069	10	14.341	11.441	0.1118	10	11.324	7.418	0.1125	10	12.295	15.087	0.0893	8	8.655	3.839
748	0.0218	2	13.600	5.940	0.0229	2	67.150	60.458	0.0225	2	18.650	18.031	0.0221	2	13.755	0.502
749	0.0214	2	20.670	21.171	0.0225	2	20.250	4.313	0.0229	2	10.790	0.919	0.0221	2	15.695	9.199
750	0.0844	8	14.689	17.321	0.0791	7	14.907	9.349	0.0900	8	45.238	32.993	0.0668	6	28.880	31.040
751	0.0413	4	20.053	13.204	0.0338	3	20.017	15.186	0.0225	2	39.500	31.113	0.0334	3	80.024	73.402

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

TABLE 4.- Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2003-2011). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	0.00	710.95	-	1855.08	1976.50	2125.24	587.05	147.50	1545.80
387	4067.84	16780.80	-	13440.00	7948.80	11906.69	8465.92	6105.15	3085.44
388	7450.59	15243.90	-	16930.37	17862.78	11377.52	4791.15	6998.06	2967.74
389	233.76	2936.93	-	16767.19	19073.88	21691.69	10057.48	5163.08	5806.67
390	16.30	0.00	-	10567.88	5259.74	4187.33	1272.22	137.14	221.50
391	88.36	1610.22	-	4972.37	4441.50	6452.72	1365.02	1797.75	702.67
392	1812.50	2262.00	-	1000.50	6140.75	1648.65	1926.91	1506.55	2091.63
729	6483.96	5673.00	-	4486.32	4593.27	3326.92	4482.35	3856.40	1678.09
730	4148.00	1300.50	-	1428.57	822.80	6932.03	5111.33	3478.77	1322.09
731	7851.60	5888.16	-	3594.96	6760.51	9185.76	4839.12	8546.40	883.51
732	9956.10	2552.55	-	1517.67	2274.58	9904.70	11118.61	13093.66	4952.58
733	n.s.	4266.60	-	4342.16	5758.74	7436.52	8585.81	8691.35	2467.00
734	n.s.	3146.70	-	685.06	709.69	1163.18	9004.05	4957.20	1720.18
741	2720.00	1151.67	-	564.75	459.00	700.50	3543.50	2923.50	1925.50
742	2035.20	1990.40	-	677.92	302.56	922.88	2492.80	3682.56	738.88
743	n.s.	447.02	-	242.25	557.18	329.46	1234.38	2548.73	1182.44
744	n.s.	495.00	-	694.32	1898.82	1540.77	2058.54	3246.21	1696.86
745	3828.00	4500.80	-	2514.88	2970.59	7273.20	10348.82	11367.77	9369.03
746	11564.98	3737.07	-	2223.29	2730.28	22281.93	9042.92	16205.28	5632.73
747	n.s.	366.83	-	3133.67	3995.56	10382.88	8198.79	8901.58	6266.04
748	2178.30	1013.63	-	545.11	1027.14	2162.40	10676.85	2965.35	2187.05
749	1076.04	825.30	-	535.50	505.26	2604.42	2551.50	1359.54	1977.57
750	n.s.	0.00	-	5582.86	5205.09	8166.95	8288.21	25152.05	16057.28
751	n.s.	n.s.	-	1046.53	4671.60	4592.14	4583.82	9045.50	18325.42
TOTAL	65511.53	76900.01	-	99349.19	107946.61	158296.49	134627.15	151877.06	94803.69
	14.64	12.29	-	15.32	16.64	24.40	20.75	23.41	14.61
SD	1.09	0.59	-	0.95	1.33	2.12	1.68	1.92	1.97

TABLE 5.- Survey estimates (by the swept area method) of **Greenland halibut** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	0	62	-	162	176	186	52	13	135
387	356	1570	-	1195	707	1095	772	534	274
388	670	1452	-	1495	1588	1018	432	614	264
389	21	261	-	1476	1695	1947	877	455	516
390	1	0	-	931	468	360	111	12	20
391	8	148	-	442	395	569	119	158	61
392	156	212	-	87	546	149	168	134	183
729	618	513	-	399	408	296	394	343	149
730	375	118	-	131	73	645	454	313	119
731	686	507	-	316	601	835	425	760	79
732	885	243	-	136	202	888	988	1164	437
733	n.s.	388	-	383	512	690	763	773	217
734	n.s.	311	-	61	63	105	828	441	153
741	242	107	-	52	41	67	320	260	177
742	175	166	-	59	27	88	233	327	66
743	n.s.	48	-	22	50	33	122	227	107
744	n.s.	49	-	61	175	139	196	284	153
745	337	424	-	220	264	655	926	1010	840
746	1037	332	-	198	247	2097	813	1433	497
747	n.s.	36	-	280	355	971	734	791	562
748	200	102	-	50	91	199	933	264	198
749	97	75	-	47	45	244	227	119	179
750	n.s.	0	-	500	460	774	733	2236	1443
751	n.s.	n.s.	-	92	415	445	407	804	1647
TOTAL	5863	7121	-	8795	9603	14494	12030	13466	8477
SD	445	325	-	551	769	1223	979	1107	1147

Table 6.- Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2003-2011 for **Greenland halibut, American plaice** and **witch flounder**. The equation is Weight=a(Length+0.5)^b. To calculate the parameters for the indeterminate individuals, we used the total data (males+females+indeterminate individuals).

	Greenland halibut,				American plaice				Witch flounder			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2003	All	$W = 0.0020\ L^{3.3855}$	429	0.9897	All	$W = 0.0018\ L^{3.4328}$	725	0.9873	All	$W = 0.0019\ L^{3.3452}$	96	0.9883
	Males	$W = 0.0020\ L^{3.3776}$	231	0.9858	Males	$W = 0.0025\ L^{3.3191}$	205	0.9813	Males	$W = 0.0018\ L^{3.3564}$	39	0.9901
	Females	$W = 0.0020\ L^{3.3914}$	198	0.9922	Females	$W = 0.0016\ L^{3.4755}$	516	0.9887	Females	$W = 0.0018\ L^{3.3457}$	55	0.9861
2004	All	$W = 0.0025\ L^{3.3067}$	724	0.9817	All	$W = 0.0026\ L^{3.4033}$	515	0.9808	All	$W = 0.0013\ L^{3.4496}$	139	0.9888
	Males	$W = 0.0021\ L^{3.3591}$	335	0.9886	Males	$W = 0.0045\ L^{3.1673}$	142	0.9473	Males	$W = 0.0009\ L^{3.5684}$	51	0.9796
	Females	$W = 0.0030\ L^{3.2628}$	389	0.9769	Females	$W = 0.0022\ L^{3.4001}$	373	0.9856	Females	$W = 0.0013\ L^{3.4636}$	72	0.9907
2006	All	$W = 0.0021\ L^{3.3631}$	1220	0.9835	All	$W = 0.0025\ L^{3.3723}$	759	0.9784	All	$W = 0.0026\ L^{3.2619}$	193	0.9694
	Males	$W = 0.0019\ L^{3.3863}$	583	0.9831	Males	$W = 0.0026\ L^{3.3615}$	267	0.9629	Males	$W = 0.0046\ L^{3.0994}$	65	0.963
	Females	$W = 0.0023\ L^{3.3342}$	637	0.9835	Females	$W = 0.0031\ L^{3.3146}$	486	0.9776	Females	$W = 0.0021\ L^{3.3201}$	123	0.9631
2007	All	$W = 0.0033\ L^{3.2385}$	1544	0.989	All	$W = 0.0024\ L^{3.3710}$	1276	0.9873	All	$W = 0.0023\ L^{3.3024}$	249	0.9776
	Males	$W = 0.0032\ L^{3.2464}$	694	0.9876	Males	$W = 0.0026\ L^{3.3456}$	444	0.9734	Males	$W = 0.0033\ L^{3.1948}$	106	0.9618
	Females	$W = 0.0037\ L^{3.2183}$	842	0.9898	Females	$W = 0.0028\ L^{3.3289}$	809	0.991	Females	$W = 0.0025\ L^{3.2803}$	135	0.988
2008	All	$W = 0.0037\ L^{3.2060}$	1704	0.99	All	$W = 0.0044\ L^{3.2282}$	1196	0.9894	All	$W = 0.0031\ L^{3.2244}$	381	0.9844
	Males	$W = 0.0036\ L^{3.2070}$	700	0.989	Males	$W = 0.0057\ L^{3.1501}$	386	0.9853	Males	$W = 0.0028\ L^{3.2523}$	147	0.986
	Females	$W = 0.0038\ L^{3.2008}$	998	0.99	Females	$W = 0.0042\ L^{3.2366}$	773	0.9931	Females	$W = 0.0031\ L^{3.2241}$	210	0.9882
2009	All	$W = 0.0032\ L^{3.2445}$	1407	0.9945	All	$W = 0.0038\ L^{3.2226}$	812	0.9890	All	$W = 0.0020\ L^{3.3367}$	221	0.9906
	Males	$W = 0.0030\ L^{3.2546}$	568	0.9936	Males	$W = 0.0043\ L^{3.1859}$	263	0.9847	Males	$W = 0.0016\ L^{3.3951}$	74	0.9845
	Females	$W = 0.0034\ L^{3.2303}$	826	0.9954	Females	$W = 0.0037\ L^{3.2324}$	542	0.9881	Females	$W = 0.0018\ L^{3.3712}$	134	0.9891
2010	All	$W = 0.0045\ L^{3.1518}$	1434	0.9898	All	$W = 0.0030\ L^{3.3098}$	975	0.9910	All	$W = 0.0016\ L^{3.4075}$	193	0.9936
	Males	$W = 0.0045\ L^{3.1470}$	609	0.9903	Males	$W = 0.0035\ L^{3.2635}$	288	0.9810	Males	$W = 0.0012\ L^{3.4881}$	55	0.9787
	Females	$W = 0.0048\ L^{3.1409}$	824	0.9897	Females	$W = 0.0030\ L^{3.3045}$	667	0.9927	Females	$W = 0.0015\ L^{3.4199}$	119	0.9923
2011	All	$W = 0.0043\ L^{3.1624}$	1469	0.9948	All	$W = 0.0029\ L^{3.3106}$	1285	0.9914	All	$W = 0.0017\ L^{3.3810}$	193	0.9926
	Males	$W = 0.0045\ L^{3.1411}$	599	0.9946	Males	$W = 0.0036\ L^{3.2430}$	431	0.9848	Males	$W = 0.0016\ L^{3.4021}$	88	0.9858
	Females	$W = 0.0043\ L^{3.1658}$	868	0.9949	Females	$W = 0.0027\ L^{3.3356}$	854	0.9924	Females	$W = 0.0015\ L^{3.4172}$	105	0.9896

TABLE 7.- Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2003-2007 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	2003 (*)				2004				2006				2007			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
6	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.01	0.00	0.01	0.02
10	0.49	0.64	0.00	1.14	0.00	0.07	0.00	0.07	0.26	0.08	0.01	0.35	0.16	0.16	0.06	0.38
12	1.04	1.65	0.00	2.69	0.51	0.67	0.10	1.28	2.12	1.48	0.00	3.60	0.94	0.99	0.06	1.99
14	0.89	1.25	0.00	2.14	1.24	1.63	0.00	2.86	2.64	3.18	0.00	5.82	1.09	1.47	0.00	2.56
16	0.03	0.03	0.00	0.06	1.27	1.56	0.02	2.85	1.01	1.38	0.00	2.40	0.26	0.45	0.00	0.72
18	0.06	0.06	0.00	0.12	0.09	0.68	0.00	0.77	0.05	0.15	0.00	0.19	0.06	0.01	0.00	0.07
20	0.36	0.62	0.00	0.99	0.01	0.02	0.00	0.03	0.01	0.01	0.00	0.02	0.02	0.04	0.00	0.06
22	2.07	2.63	0.00	4.71	0.33	0.10	0.00	0.44	0.01	0.09	0.00	0.10	0.19	0.04	0.00	0.23
24	3.81	3.68	0.00	7.49	1.08	0.33	0.00	1.42	0.16	0.08	0.00	0.24	0.42	0.45	0.00	0.88
26	3.03	2.55	0.00	5.58	1.88	0.82	0.00	2.71	0.40	0.35	0.00	0.75	0.60	0.69	0.00	1.29
28	1.44	1.85	0.00	3.29	1.35	1.15	0.00	2.51	0.65	0.74	0.00	1.39	0.35	0.52	0.00	0.88
30	2.21	2.13	0.00	4.35	1.95	1.32	0.00	3.28	0.82	0.70	0.00	1.52	0.21	0.08	0.00	0.29
32	2.60	2.52	0.00	5.12	2.31	1.82	0.00	4.14	0.85	0.79	0.00	1.64	0.55	0.28	0.00	0.83
34	2.47	1.88	0.00	4.36	2.19	2.08	0.00	4.28	1.54	1.36	0.00	2.90	0.88	0.78	0.00	1.66
36	1.55	1.43	0.00	2.98	1.68	2.26	0.00	3.94	1.57	1.62	0.00	3.19	1.22	1.32	0.00	2.54
38	1.12	1.34	0.00	2.46	1.32	1.73	0.00	3.05	1.26	1.92	0.00	3.18	1.43	1.58	0.00	3.01
40	0.47	1.00	0.00	1.47	0.95	1.46	0.00	2.40	1.28	1.72	0.00	2.99	1.31	2.13	0.00	3.45
42	0.40	0.81	0.00	1.21	0.35	0.79	0.00	1.14	1.31	1.56	0.00	2.87	1.11	2.05	0.00	3.16
44	0.30	0.62	0.00	0.92	0.26	0.68	0.00	0.94	0.85	1.69	0.00	2.53	1.02	1.92	0.00	2.94
46	0.08	0.25	0.00	0.33	0.11	0.29	0.00	0.40	0.48	1.02	0.00	1.50	0.69	1.41	0.00	2.09
48	0.16	0.21	0.00	0.37	0.09	0.19	0.00	0.27	0.30	0.81	0.00	1.12	0.34	1.02	0.00	1.37
50	0.13	0.22	0.00	0.36	0.08	0.08	0.00	0.16	0.13	0.42	0.00	0.54	0.15	0.72	0.00	0.86
52	0.14	0.17	0.00	0.30	0.00	0.07	0.00	0.07	0.05	0.28	0.00	0.33	0.16	0.57	0.00	0.74
54	0.05	0.20	0.00	0.25	0.05	0.07	0.00	0.12	0.07	0.17	0.00	0.24	0.06	0.32	0.00	0.38
56	0.01	0.10	0.00	0.12	0.02	0.03	0.00	0.05	0.01	0.07	0.00	0.08	0.03	0.13	0.00	0.16
58	0.03	0.02	0.00	0.05	0.01	0.04	0.00	0.05	0.03	0.06	0.00	0.09	0.03	0.06	0.00	0.09
60	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.05	0.00	0.08	0.00	0.08	0.01	0.09	0.00	0.10
62	0.00	0.08	0.00	0.08	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.03	0.00	0.07	0.00	0.07
64	0.02	0.04	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02
68	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01
70	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
72	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
88	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	25.0	28.1	0.0	53.1	19.2	20.1	0.1	39.4	17.9	21.9	0.0	39.8	13.3	19.4	0.1	32.9
Nº samples:				35				43				94				85
Nº Ind.:	920	1035	0	1955	935	985	4	1924	1549	1907	1	3457	1205	1761	13	2979
Sampled catch:				585				695				1397				1533
Range:				10-88				7-75				9-87				9-80
Total catch:				585				695				1397				1533
Total valid hauls:				39				50				100				94

TABLE 8.- Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2008-2011 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2008				2009				2010				2011			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
8	0.01	0.02	0.02	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03
10	0.37	0.35	0.12	0.85	0.28	0.40	0.11	0.79	0.01	0.04	0.07	0.12	0.00	0.00	0.04	0.04
12	0.93	1.14	0.14	2.21	1.66	2.28	0.20	4.14	0.12	0.16	0.26	0.53	0.10	0.09	0.00	0.18
14	0.24	0.44	0.05	0.73	0.77	1.22	0.01	2.00	0.15	0.17	0.23	0.55	0.52	0.51	0.00	1.03
16	0.00	0.00	0.00	0.00	0.06	0.10	0.00	0.16	0.06	0.03	0.01	0.11	1.20	1.50	0.00	2.70
18	0.00	0.03	0.00	0.03	0.02	0.02	0.00	0.04	0.05	0.04	0.00	0.09	0.32	0.38	0.00	0.70
20	0.04	0.13	0.00	0.17	0.05	0.09	0.00	0.14	0.04	0.17	0.00	0.21	0.09	0.07	0.00	0.16
22	0.46	0.55	0.00	1.01	0.21	0.26	0.00	0.48	0.34	0.43	0.00	0.76	0.27	0.28	0.00	0.54
24	0.89	1.16	0.00	2.05	0.44	0.66	0.00	1.10	0.91	0.98	0.00	1.90	0.38	0.61	0.00	0.99
26	0.72	1.57	0.00	2.29	0.31	0.41	0.00	0.71	0.76	1.00	0.00	1.76	0.37	0.48	0.00	0.85
28	0.27	0.67	0.00	0.94	0.23	0.20	0.00	0.42	0.44	0.42	0.00	0.86	0.24	0.28	0.00	0.51
30	0.23	0.21	0.00	0.44	0.56	0.29	0.00	0.85	0.23	0.18	0.00	0.41	0.24	0.21	0.00	0.45
32	0.50	0.46	0.00	0.96	0.62	0.96	0.00	1.59	0.53	0.57	0.00	1.11	0.25	0.44	0.00	0.69
34	0.94	0.88	0.00	1.82	0.88	1.28	0.00	2.17	0.67	0.73	0.00	1.41	0.42	0.41	0.00	0.84
36	1.12	1.20	0.00	2.32	0.90	1.09	0.00	1.99	1.01	0.99	0.00	1.99	0.46	0.55	0.00	1.01
38	0.97	1.24	0.00	2.21	0.91	1.18	0.00	2.09	1.28	1.24	0.00	2.52	0.64	0.51	0.00	1.14
40	1.18	1.26	0.00	2.43	0.92	1.67	0.00	2.59	1.31	1.82	0.00	3.14	0.60	0.85	0.00	1.45
42	1.69	2.02	0.00	3.71	0.85	1.63	0.00	2.48	1.14	1.72	0.00	2.86	0.65	0.82	0.00	1.48
44	1.23	2.24	0.00	3.47	0.88	1.65	0.00	2.53	0.86	1.49	0.00	2.35	0.54	0.95	0.00	1.49
46	1.16	2.06	0.00	3.22	0.82	1.47	0.00	2.29	0.80	1.48	0.00	2.28	0.56	0.88	0.00	1.43
48	0.87	2.08	0.00	2.95	0.59	1.81	0.00	2.39	0.81	1.40	0.00	2.21	0.43	0.83	0.00	1.26
50	0.42	1.62	0.00	2.04	0.37	1.13	0.00	1.50	0.50	1.19	0.00	1.68	0.28	0.73	0.00	1.02
52	0.29	1.30	0.00	1.59	0.23	1.13	0.00	1.36	0.38	1.08	0.00	1.45	0.30	0.71	0.00	1.01
54	0.18	0.80	0.00	0.98	0.13	0.82	0.00	0.95	0.24	0.99	0.00	1.23	0.15	0.61	0.00	0.76
56	0.15	0.43	0.00	0.58	0.07	0.57	0.00	0.64	0.11	0.84	0.00	0.95	0.13	0.48	0.00	0.61
58	0.03	0.28	0.00	0.30	0.02	0.31	0.00	0.32	0.00	0.56	0.00	0.56	0.03	0.44	0.00	0.47
60	0.01	0.13	0.00	0.14	0.02	0.28	0.00	0.30	0.04	0.34	0.00	0.38	0.01	0.28	0.00	0.29
62	0.02	0.06	0.00	0.08	0.00	0.15	0.00	0.15	0.00	0.20	0.00	0.20	0.00	0.19	0.00	0.19
64	0.00	0.08	0.00	0.08	0.00	0.09	0.00	0.09	0.00	0.11	0.00	0.11	0.00	0.18	0.00	0.18
66	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.07	0.00	0.07	0.00	0.08	0.00	0.08
68	0.00	0.02	0.00	0.02	0.01	0.01	0.00	0.02	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02
70	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06
72	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04
74	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03
76	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
78	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03
80	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.01
82	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	14.9	24.7	0.3	39.9	12.8	23.3	0.3	36.5	12.8	20.7	0.6	34.0	9.2	14.5	0.1	23.8
Nº samples:				98				96				88				82
Nº Ind.:	1447	2416	37	3900	1256	2298	31	3585	1275	2055	42	3372	813	1275	4	2092
Sampled catch:				2431				2098				2403				1319
Range:				9-92				9-85				10-94				7-80
Total catch:				2431				2098				2403				1319
Total valid hauls:				100				98				97				89

TABLE 9.- Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

Stratum	2003 (*)				2004				2006				2007			
	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0225	2	3.985	2.920	0.0229	2	19.100	15.132	0.0229	2	48.530	33.757	0.0225	2	31.925	7.955
387	0.0229	2	3.850	4.031	0.0214	2	17.810	2.814	0.0225	2	6.653	5.533	0.0225	2	7.992	2.039
388	0.0334	3	7.317	2.249	0.0105	1	13.450	-	0.0566	5	7.618	2.653	0.0563	5	8.390	2.267
389	0.0454	4	6.455	2.150	0.0225	2	8.950	4.073	0.0795	7	20.584	12.793	0.0900	8	25.475	13.677
390	0.0563	5	1.854	1.584	0.0345	3	27.777	14.246	0.1249	11	76.086	51.616	0.1350	12	69.235	50.977
391	0.0338	3	6.207	1.670	0.0218	2	14.890	3.125	0.0450	4	10.585	9.713	0.0450	4	37.163	30.535
392	0.0116	1	8.400	-	0.0214	2	0.300	0.424	0.0229	2	0.000	0.000	0.0225	2	1.055	0.658
729	0.0210	2	55.190	19.643	0.0221	2	0.150	0.212	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000
730	0.0221	2	59.000	21.779	0.0221	2	0.000	0.000	0.0326	3	0.000	0.000	0.0225	2	0.000	0.000
731	0.0229	2	25.610	11.017	0.0233	2	1.450	2.051	0.0341	3	0.000	0.000	0.0338	3	0.253	0.439
732	0.0113	1	40.700	-	0.0210	2	0.000	0.000	0.0334	3	0.000	0.000	0.0338	3	0.000	0.000
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	1.267	1.186	0.0454	4	0.000	0.000	0.0338	3	0.320	0.554
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0113	1	0.000	-	0.0323	3	0.000	0.000	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0116	1	0.000	-	0.0120	1	0.000	-	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	0.000	-	0.0229	2	0.000	0.000	0.0218	2	0.000	0.000
745	0.0341	3	0.610	0.849	0.0319	3	0.000	0.000	0.0686	6	0.000	0.000	0.0675	6	0.000	0.000
746	0.0446	4	0.000	0.000	0.0338	3	0.000	0.000	0.0675	6	0.000	0.000	0.0664	6	0.000	0.000
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.000	0.000	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000
748	0.0109	1	1.010	-	0.0199	2	0.000	0.000	0.0326	3	0.000	0.000	0.0338	3	0.000	0.000
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0113	1	0.000	-
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	0.000	0.000	0.0679	6	0.000	0.000
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s	n.s	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000

(**) $SD = \frac{\sum (x_i - \bar{x})}{n \quad 1}$

TABLE 9 (cont).- Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

Stratum	2008				2009				2010				2011			
	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0229	2	64.750	60.033	0.0225	2	561.169	81.785	0.0225	2	2.761	1.119	0.0229	2	202.650	197.071
387	0.0435	4	5.906	4.512	0.0439	4	6.887	2.182	0.0458	4	1.394	2.182	0.0450	4	3.587	2.776
388	0.0559	5	2.925	1.905	0.0555	5	3.681	4.233	0.0570	5	22.107	36.161	0.0563	5	2.976	3.120
389	0.0780	7	12.982	11.014	0.0803	7	24.644	25.370	0.0795	7	35.954	30.883	0.0675	6	9.284	6.823
390	0.1395	12	117.141	134.128	0.1373	12	114.493	164.475	0.1249	11	9.692	8.751	0.1009	9	54.052	27.065
391	0.0454	4	20.580	28.816	0.0458	4	9.601	7.900	0.0454	4	0.526	0.744	0.0458	4	21.830	22.495
392	0.0221	2	0.000	0.000	0.0229	2	1.060	0.905	0.0225	2	0.000	0.000	0.0229	2	0.545	0.771
729	0.0338	3	0.000	0.000	0.0341	3	0.020	0.035	0.0338	3	0.000	0.000	0.0338	3	0.107	0.185
730	0.0323	3	0.000	0.000	0.0338	3	0.194	0.335	0.0334	3	0.000	0.000	0.0334	3	0.000	0.000
731	0.0330	3	0.327	0.566	0.0341	3	0.104	0.179	0.0338	3	0.000	0.000	0.0334	3	0.000	0.000
732	0.0446	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.039	0.057	0.0454	4	0.000	0.000
733	0.0431	4	0.426	0.762	0.0450	4	0.018	0.036	0.0450	4	0.555	0.785	0.0454	4	0.025	0.049
734	0.0221	2	0.066	0.093	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0218	2	0.000	0.000
742	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
743	0.0203	2	0.000	0.000	0.0203	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000
744	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000
745	0.0555	5	0.000	0.000	0.0559	5	0.000	0.000	0.0563	5	0.000	0.000	0.0446	4	0.000	0.000
746	0.0638	6	0.000	0.000	0.0668	6	0.065	0.159	0.0679	6	0.000	0.000	0.0566	5	0.000	0.000
747	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000	0.1125	10	0.000	0.000	0.0893	8	0.000	0.000
748	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000
749	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000
750	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000	0.0900	8	0.000	0.000	0.0668	6	0.000	0.000
751	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000	0.0225	2	0.000	0.000	0.0334	3	0.000	0.000

(**) $SD = \frac{\sum (x_i - \bar{x})}{n \quad 1}$

TABLE 10.- Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2011). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	470.23	2253.80	-	5726.54	3767.15	7640.50	66217.94	325.80	23912.70
387	985.60	4559.36	-	1703.04	2045.95	1511.87	1763.14	356.97	918.27
388	2612.05	4801.65	-	2719.48	2995.09	1044.23	1314.12	7892.20	1062.36
389	3285.60	4555.55	-	10477.26	12966.65	6608.06	12543.72	18300.40	4725.39
390	1511.01	22637.98	-	62010.39	56426.39	95469.71	93311.86	7899.18	44052.56
391	1750.28	4198.98	-	2984.97	10479.83	5803.56	2707.34	148.33	6156.13
392	1218.00	43.50	-	0.00	152.90	0.00	153.70	0.00	79.03
729	10265.34	27.90	-	0.00	0.00	0.00	3.72	0.00	19.84
730	10030.00	0.00	-	0.00	0.00	0.00	32.92	0.00	0.00
731	5531.76	313.20	-	0.00	54.72	70.56	22.54	0.00	0.00
732	9401.70	0.00	-	0.00	0.00	0.00	0.00	9.07	0.00
733	n.s	296.40	-	0.00	74.88	99.68	4.15	129.87	5.73
734	n.s	0.00	-	0.00	0.00	10.10	0.00	0.00	0.00
741	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
742	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
743	n.s	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
744	n.s	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
745	212.28	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
746	0.00	0.00	-	0.00	0.00	0.00	25.48	0.00	0.00
747	n.s	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
748	160.59	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
749	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
750	n.s	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
751	n.s	n.s	-	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	47434.44	43688.32	-	85621.68	88963.55	118258.27	178100.64	35061.82	80932.01
	10.60	6.98	-	13.20	13.71	18.23	27.46	5.40	12.48
SD	0.95	1.12	-	2.06	2.00	4.98	6.11	1.32	2.83

TABLE 11.- Survey estimates (by the swept area method) of **American plaice** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	42	197	-	501	335	668	5886	685	2091
387	86	427	-	151	182	139	161	54	82
388	235	457	-	240	266	93	118	44	94
389	290	405	-	923	1153	593	1094	991	420
390	134	1969	-	5462	5016	8212	8158	2581	3930
391	156	386	-	265	932	512	237	241	538
392	105	4	-	0	14	0	13	7	7
729	978	3	-	0	0	0	0	0	2
730	907	0	-	0	0	0	3	0	0
731	484	27	-	0	5	6	2	0	0
732	836	0	-	0	0	0	0	0	0
733	n.s	27	-	0	7	9	0	1	1
734	n.s	0	-	0	0	1	0	8	0
741	0	0	-	0	0	0	0	0	0
742	0	0	-	0	0	0	0	0	0
743	n.s	0	-	0	0	0	0	0	0
744	n.s	0	-	0	0	0	0	0	0
745	19	0	-	0	0	0	0	0	0
746	0	0	-	0	0	0	2	0	0
747	n.s	0	-	0	0	0	0	0	0
748	15	0	-	0	0	0	0	0	0
749	0	0	-	0	0	0	0	0	0
750	n.s	0	-	0	0	0	0	0	0
751	n.s	n.s	-	0	0	0	0	0	0
TOTAL	4284	3901	-	7542	7908	10234	15676	4611	7165
SD	362	626	-	1150	1156	2805	3411	925	1580

TABLE 12.- American plaice length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2003-2007 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	2003 (*)				2004				2006				2007			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.02	0.02
6	0.00	0.03	0.07	0.10	0.05	0.00	0.00	0.05	0.02	0.02	0.29	0.33	0.02	0.00	1.10	1.12
8	0.24	0.19	0.04	0.47	0.04	0.00	0.06	0.10	0.23	0.10	1.28	1.62	0.06	0.02	0.73	0.82
10	0.15	0.32	0.04	0.50	0.09	0.09	0.19	0.37	0.07	0.05	0.02	0.14	0.36	0.33	0.03	0.72
12	0.55	0.70	0.00	1.26	0.03	0.42	0.06	0.52	1.10	1.39	0.00	2.49	2.67	2.75	0.00	5.43
14	0.43	1.06	0.00	1.50	0.65	0.56	0.31	1.52	1.87	2.18	0.00	4.05	2.16	2.08	0.00	4.24
16	1.28	3.08	0.00	4.36	0.62	0.81	0.00	1.43	0.56	0.80	0.00	1.36	1.14	1.79	0.00	2.93
18	1.16	3.38	0.00	4.53	0.59	1.37	0.00	1.96	0.34	0.63	0.00	0.97	1.72	3.00	0.00	4.72
20	0.97	3.38	0.00	4.35	0.43	2.85	0.00	3.29	0.42	0.60	0.00	1.03	1.19	2.15	0.00	3.34
22	0.49	3.34	0.00	3.83	0.71	4.01	0.00	4.73	0.66	1.06	0.00	1.72	0.52	1.28	0.00	1.80
24	0.41	2.34	0.00	2.75	0.88	4.92	0.00	5.79	0.56	1.28	0.00	1.85	0.68	1.36	0.00	2.04
26	0.21	1.55	0.00	1.76	0.32	3.80	0.00	4.12	0.47	1.47	0.02	1.96	0.63	1.50	0.00	2.13
28	0.18	1.08	0.00	1.26	0.34	2.16	0.00	2.50	0.48	2.43	0.00	2.91	0.53	1.52	0.00	2.05
30	0.33	0.86	0.00	1.20	0.06	0.94	0.00	1.00	0.35	2.95	0.00	3.30	0.29	1.65	0.00	1.94
32	0.39	0.51	0.00	0.90	0.04	0.55	0.00	0.59	0.34	2.59	0.00	2.93	0.18	2.14	0.00	2.32
34	0.43	0.90	0.00	1.33	0.04	0.45	0.00	0.49	0.20	2.57	0.00	2.77	0.16	2.87	0.00	3.03
36	0.29	1.35	0.00	1.64	0.00	0.51	0.00	0.51	0.20	1.90	0.00	2.10	0.20	2.45	0.00	2.65
38	0.19	2.03	0.00	2.22	0.00	0.47	0.00	0.47	0.09	1.15	0.00	1.24	0.08	2.29	0.00	2.38
40	0.06	2.07	0.00	2.13	0.12	0.68	0.00	0.80	0.02	0.74	0.00	0.75	0.04	1.83	0.00	1.88
42	0.07	1.78	0.00	1.85	0.00	0.70	0.00	0.70	0.01	0.74	0.00	0.76	0.00	1.23	0.00	1.23
44	0.07	1.51	0.00	1.58	0.00	0.43	0.00	0.43	0.02	1.00	0.00	1.02	0.01	0.90	0.00	0.91
46	0.02	0.83	0.00	0.85	0.00	0.62	0.00	0.62	0.02	1.01	0.00	1.03	0.02	0.74	0.00	0.77
48	0.00	0.32	0.00	0.32	0.00	0.20	0.00	0.20	0.03	1.11	0.00	1.15	0.00	0.57	0.00	0.57
50	0.00	0.36	0.00	0.36	0.00	0.17	0.00	0.17	0.02	0.50	0.00	0.52	0.02	0.60	0.00	0.63
52	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.50	0.00	0.50	0.01	0.35	0.00	0.36
54	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.15	0.00	0.15	0.00	0.23	0.00	0.23
56	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.07	0.00	0.07	0.00	0.09	0.00	0.09
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.10	0.00	0.10
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Total	7.95	33.07	0.14	41.16	5.02	26.77	0.62	32.41	8.20	29.04	1.62	38.86	12.72	35.86	1.88	50.46
Nº samples:				30				17				31				37
Nº Ind.:	333	1297	5	1635	178	846	10	1034	704	2441	136	3281	1129	3116	179	4424
Sampled catch:				423				226				1172				1309
Range:				6-54				7-57				3-60				4-63
Total catch:				423				226				1172				1309
Total valid hauls:				39				50				100				94

TABLE 13.- American plaice length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2008-2011 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2008				2009				2010				2011			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
6	0.00	0.00	0.76	0.76	0.06	0.04	0.15	0.25	0.20	0.10	0.97	1.28	0.00	0.00	0.00	0.00
8	0.01	0.02	0.87	0.90	0.22	0.12	0.07	0.41	0.22	0.26	0.76	1.24	0.04	0.00	0.00	0.04
10	0.55	0.39	0.05	0.99	4.28	3.78	0.09	8.15	0.49	0.58	0.17	1.25	0.56	0.76	0.00	1.32
12	3.49	3.58	0.06	7.13	3.28	3.70	0.01	6.99	1.60	1.48	0.03	3.10	5.41	5.60	0.00	11.01
14	1.95	2.05	0.00	4.00	2.29	4.64	0.01	6.95	1.05	2.29	0.00	3.34	3.77	5.50	0.00	9.28
16	0.86	1.36	0.00	2.22	3.81	7.38	0.00	11.19	1.27	1.93	0.00	3.20	2.07	2.98	0.00	5.05
18	1.45	2.22	0.00	3.67	1.42	2.83	0.00	4.26	0.78	1.76	0.00	2.54	2.00	3.42	0.00	5.43
20	0.92	2.03	0.00	2.94	1.07	3.16	0.00	4.23	0.78	2.20	0.00	2.98	1.16	3.70	0.00	4.86
22	0.94	2.10	0.00	3.04	0.88	3.30	0.00	4.18	0.33	1.25	0.00	1.58	0.63	2.16	0.00	2.80
24	1.12	1.96	0.00	3.08	0.82	3.04	0.00	3.86	0.19	0.68	0.00	0.87	0.45	3.01	0.00	3.46
26	0.94	1.68	0.00	2.62	1.27	3.98	0.00	5.25	0.23	0.85	0.00	1.08	0.44	1.66	0.00	2.10
28	0.75	1.70	0.00	2.46	1.09	3.71	0.00	4.81	0.21	0.84	0.00	1.05	0.41	1.27	0.00	1.68
30	0.56	1.26	0.00	1.81	0.77	3.61	0.00	4.38	0.20	0.74	0.00	0.94	0.44	1.16	0.00	1.61
32	0.62	1.00	0.00	1.63	0.81	3.21	0.00	4.02	0.11	0.98	0.00	1.08	0.37	1.52	0.00	1.89
34	0.46	0.83	0.00	1.30	0.64	3.33	0.00	3.97	0.07	1.02	0.00	1.08	0.40	2.24	0.00	2.64
36	0.44	1.45	0.00	1.89	0.43	2.47	0.00	2.91	0.09	0.63	0.00	0.72	0.12	2.16	0.00	2.28
38	0.35	1.89	0.00	2.23	0.24	3.29	0.00	3.53	0.02	0.70	0.00	0.71	0.17	2.39	0.00	2.56
40	0.12	2.43	0.00	2.55	0.12	4.41	0.00	4.53	0.02	0.39	0.00	0.41	0.07	1.64	0.00	1.71
42	0.07	2.41	0.00	2.48	0.02	4.78	0.00	4.80	0.02	0.49	0.00	0.51	0.00	1.04	0.00	1.04
44	0.00	1.88	0.00	1.88	0.08	4.09	0.00	4.16	0.01	0.53	0.00	0.53	0.00	1.02	0.00	1.02
46	0.00	1.59	0.00	1.59	0.04	2.20	0.00	2.24	0.00	0.46	0.00	0.46	0.00	0.93	0.00	0.93
48	0.00	1.09	0.00	1.09	0.00	1.62	0.00	1.62	0.00	0.21	0.00	0.21	0.00	0.56	0.00	0.56
50	0.00	0.83	0.00	0.83	0.00	1.13	0.00	1.13	0.02	0.12	0.00	0.14	0.00	0.43	0.00	0.43
52	0.00	0.66	0.00	0.66	0.00	0.73	0.00	0.73	0.00	0.14	0.00	0.14	0.00	0.23	0.00	0.23
54	0.00	0.34	0.00	0.34	0.04	0.40	0.00	0.44	0.00	0.07	0.00	0.07	0.01	0.11	0.00	0.12
56	0.00	0.04	0.00	0.04	0.00	0.13	0.00	0.13	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00
58	0.00	0.04	0.00	0.04	0.00	0.12	0.00	0.12	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.05
60	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Total	15.61	36.88	1.75	54.24	23.70	75.22	0.34	99.26	7.90	20.75	1.94	30.58	18.54	45.54	0.00	64.08
Nº samples:				37				41				35				33
Nº Ind.:	924	2383	98	3405	1033	2843	16	3892	740	2014	231	2985	1044	2582	0	3626
Sampled catch:				1749				2757				739				1066
Range:				6-61				6-59				5-63				9-63
Total catch:				1749				2757				739				1066
Total valid hauls:				100				98				97				89

TABLE 14.- Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

Stratum	2003 (*)				2004				2006				2007			
	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0229	2	0.240	0.339	0.0225	2	0.000	0.000
387	0.0229	2	0.260	0.368	0.0214	2	2.650	2.263	0.0225	2	3.434	2.996	0.0225	2	1.300	1.399
388	0.0334	3	0.159	0.122	0.0105	1	4.327	-	0.0566	5	0.876	0.480	0.0563	5	1.492	1.300
389	0.0454	4	0.013	0.019	0.0225	2	0.093	0.131	0.0795	7	0.284	0.372	0.0900	8	0.001	0.002
390	0.0563	5	0.000	0.000	0.0345	3	0.000	0.000	0.1249	11	0.079	0.185	0.1350	12	0.000	0.000
391	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0450	4	0.388	0.775	0.0450	4	0.102	0.204
392	0.0116	1	0.008	-	0.0214	2	0.004	0.006	0.0229	2	0.195	0.276	0.0225	2	1.175	1.300
729	0.0210	2	0.785	1.110	0.0221	2	2.310	0.820	0.0338	3	1.450	1.422	0.0338	3	4.823	3.341
730	0.0221	2	5.105	4.052	0.0221	2	1.885	2.666	0.0326	3	0.460	0.797	0.0225	2	0.000	0.000
731	0.0229	2	1.815	0.969	0.0233	2	3.765	3.373	0.0341	3	3.395	2.651	0.0338	3	3.854	4.324
732	0.0113	1	7.150	-	0.0210	2	2.150	1.131	0.0334	3	1.367	1.623	0.0338	3	0.317	0.548
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	2.489	2.543	0.0454	4	6.706	9.359	0.0338	3	2.052	2.218
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	0.000	0.000	0.0225	2	0.190	0.269	0.0225	2	0.066	0.093
741	0.0113	1	0	-	0.0323	3	0.003	0.003	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0116	1	0	-	0.0120	1	0.000	-	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	0.000	-	0.0229	2	0.000	0.000	0.0218	2	0.000	0.000
745	0.0341	3	0.377	0.635	0.0319	3	0.000	0.000	0.0686	6	0.000	0.000	0.0675	6	0.002	0.004
746	0.0446	4	0.000	0.000	0.0338	3	0.000	0.000	0.0675	6	0.000	0.000	0.0664	6	0.000	0.000
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.007	0.012	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000
748	0.0109	1	0.000	-	0.0199	2	0.002	0.003	0.0326	3	0.021	0.036	0.0338	3	0.000	0.000
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0113	1	0.000	-
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	0.000	0.000	0.0679	6	0.000	0.000
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

TABLE 14 (cont).- Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2003-2011, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

Stratum	2008				2009				2010				2011			
	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
385	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.002	0.003
387	0.0435	4	3.040	1.153	0.0439	4	0.177	0.190	0.0439	4	0.177	0.190	0.0450	4	4.647	1.243
388	0.0559	5	1.830	2.034	0.0555	5	1.327	1.272	0.0555	5	1.327	1.272	0.0563	5	1.499	1.958
389	0.0780	7	0.184	0.262	0.0803	7	0.005	0.013	0.0803	7	0.005	0.013	0.0675	6	0.141	0.218
390	0.1395	12	0.105	0.246	0.1373	12	0.000	0.000	0.1373	12	0.000	0.000	0.1009	9	0.000	0.000
391	0.0454	4	1.003	1.551	0.0458	4	0.103	0.198	0.0458	4	0.103	0.198	0.0458	4	0.000	0.000
392	0.0221	2	1.694	2.336	0.0229	2	1.241	1.040	0.0229	2	1.241	1.040	0.0229	2	0.301	0.330
729	0.0338	3	2.770	3.289	0.0341	3	3.187	1.846	0.0341	3	3.187	1.846	0.0338	3	12.221	7.485
730	0.0323	3	0.743	1.287	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0334	3	0.000	0.000
731	0.0330	3	3.445	1.075	0.0341	3	5.992	2.310	0.0341	3	5.992	2.310	0.0334	3	2.995	1.748
732	0.0446	4	2.056	1.827	0.0450	4	3.131	2.003	0.0450	4	3.131	2.003	0.0454	4	2.574	1.948
733	0.0431	4	5.530	4.719	0.0450	4	7.234	5.816	0.0450	4	7.234	5.816	0.0454	4	2.002	2.408
734	0.0221	2	0.200	0.283	0.0218	2	0.000	0.000	0.0218	2	0.000	0.000	0.0225	2	0.215	0.304
741	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0218	2	0.002	0.002
742	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
743	0.0203	2	0.000	0.000	0.0203	2	0.092	0.130	0.0203	2	0.092	0.130	0.0221	2	0.000	0.000
744	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000
745	0.0555	5	0.000	0.000	0.0559	5	0.010	0.022	0.0559	5	0.010	0.022	0.0446	4	0.000	0.000
746	0.0638	6	0.000	0.000	0.0668	6	0.000	0.000	0.0668	6	0.000	0.000	0.0566	5	0.000	0.000
747	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000	0.1118	10	0.000	0.000	0.0893	8	0.000	0.000
748	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000
749	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000
750	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000	0.0791	7	0.000	0.000	0.0668	6	0.058	0.141
751	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000	0.0225	2	0.000	0.000	0.0334	3	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

TABLE 15.- Stratified mean catches (Kg) and SD of **Witch flounder Witch flounder** by stratum and year (2003-2011). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	0.00	0.00	-	28.32	0.00	0.00	0.00	0.00	
387	66.56	678.40	-	878.98	332.67	778.18	45.38	393.86	
388	56.88	1544.74	-	312.80	532.50	653.38	473.74	709.43	
389	6.36	47.08	-	144.34	0.38	93.58	2.47	41.59	
390	0.00	0.00	-	64.46	0.00	85.58	0.00	0.00	
391	0.00	0.00	-	109.28	28.69	282.71	28.98	125.42	
392	1.16	0.58	-	28.28	170.30	245.56	179.87	13.70	
729	146.01	429.66	-	269.70	897.14	515.22	592.78	1370.20	
730	867.85	320.45	-	78.20	0.00	126.37	0.00	87.83	
731	392.04	813.24	-	733.32	832.46	744.12	1294.34	1758.96	
732	1651.65	496.65	-	315.70	73.15	474.94	723.32	1281.47	
733	n.s	582.50	-	1569.26	480.17	1293.90	1692.76	1979.35	
734	n.s	0.00	-	29.07	10.02	30.60	0.00	9.95	
741	0.00	0.27	-	0.00	0.00	0.00	0.00	0.00	
742	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	
743	n.s	0.00	-	0.00	0.00	0.00	4.69	0.00	
744	n.s	0.00	-	0.00	0.00	0.00	0.00	0.00	
745	131.08	0.00	-	0.00	0.58	0.00	3.48	2.51	
746	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	
747	n.s	4.83	-	0.00	0.00	0.00	0.00	0.00	
748	0.00	0.32	-	3.34	0.00	0.00	0.00	0.00	
749	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	
750	n.s	0.00	-	0.00	0.00	0.00	0.00	12.09	
751	n.s	n.s	-	0.00	0.00	0.00	0.00	0.00	
TOTAL	3319.59	4918.72	-	4565.04	3358.07	5324.12	5041.81	7786.36	
	0.74	0.79	-	0.70	0.52	0.82	0.78	1.20	
SD	0.12	0.13	-	0.20	0.12	0.13	0.13	0.24	

TABLE 16.- Survey estimates (by the swept area method) of **Witch flounder** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	Survey								
Stratum	2003	2004	2005	2006	2007	2008	2009	2010	2011
385	0	0	-	2	0	0	0	0	0
387	6	63	-	78	30	72	4	34	106
388	5	147	-	28	47	58	43	62	48
389	1	4	-	13	0	8	0	4	6
390	0	0	-	6	0	7	0	0	0
391	0	0	-	10	3	25	3	11	0
392	0	0	-	2	15	22	16	1	4
729	14	39	-	24	80	46	52	122	202
730	78	29	-	7	0	12	0	8	0
731	34	70	-	64	74	68	114	156	58
732	147	47	-	28	7	43	64	114	52
733	n.s	53	-	138	43	120	150	176	41
734	n.s	0	-	3	1	3	0	1	3
741	0	0	-	0	0	0	0	0	0
742	0	0	-	0	0	0	0	0	0
743	n.s	0	-	0	0	0	0	0	0
744	n.s	0	-	0	0	0	0	0	0
745	12	0	-	0	0	0	0	0	0
746	0	0	-	0	0	0	0	0	0
747	n.s	0	-	0	0	0	0	0	0
748	0	0	-	0	0	0	0	0	0
749	0	0	-	0	0	0	0	0	0
750	n.s	0	-	0	0	0	0	1	3
751	n.s	n.s	-	0	0	0	0	0	0
TOTAL	297	453	-	404	298	483	447	691	523
SD	51	75	-	116	71	80	74	137	86

TABLE 17.- Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2003-2007 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

	2003 (*)				2004				2006				2007			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
6	0.00	0.00	0.03	0.03	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.03	0.03	0.00	0.00	0.31	0.31	0.02	0.00	0.06	0.09	0.00	0.01	0.02	0.03
10	0.03	0.03	0.00	0.05	0.04	0.00	0.10	0.14	0.03	0.02	0.01	0.07	0.02	0.01	0.05	0.09
12	0.13	0.22	0.00	0.35	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
14	0.38	0.70	0.00	1.08	0.01	0.00	0.07	0.09	0.04	0.01	0.01	0.06	0.01	0.07	0.03	0.11
16	0.03	0.03	0.00	0.06	0.14	0.17	0.06	0.37	0.15	0.18	0.00	0.34	0.03	0.02	0.01	0.07
18	0.05	0.03	0.00	0.08	0.11	0.18	0.06	0.35	0.11	0.15	0.00	0.26	0.02	0.01	0.01	0.04
20	0.15	0.12	0.00	0.27	0.11	0.32	0.00	0.43	0.06	0.07	0.00	0.14	0.04	0.13	0.00	0.17
22	0.04	0.07	0.00	0.12	0.20	0.37	0.00	0.57	0.10	0.32	0.00	0.42	0.12	0.26	0.00	0.38
24	0.07	0.00	0.00	0.07	0.17	0.08	0.00	0.25	0.22	0.31	0.00	0.52	0.22	0.15	0.00	0.37
26	0.04	0.05	0.00	0.09	0.09	0.18	0.00	0.28	0.02	0.11	0.00	0.13	0.14	0.10	0.01	0.25
28	0.00	0.07	0.00	0.07	0.21	0.18	0.00	0.39	0.07	0.09	0.00	0.16	0.32	0.34	0.00	0.66
30	0.18	0.23	0.00	0.41	0.14	0.05	0.00	0.19	0.10	0.22	0.00	0.33	0.12	0.11	0.00	0.23
32	0.02	0.00	0.00	0.02	0.04	0.14	0.00	0.18	0.21	0.24	0.00	0.46	0.03	0.03	0.00	0.07
34	0.09	0.09	0.00	0.18	0.01	0.23	0.00	0.25	0.13	0.12	0.00	0.25	0.03	0.07	0.00	0.10
36	0.09	0.08	0.00	0.17	0.01	0.02	0.00	0.03	0.02	0.05	0.00	0.07	0.03	0.04	0.00	0.08
38	0.08	0.04	0.00	0.12	0.07	0.03	0.00	0.10	0.02	0.13	0.00	0.15	0.02	0.08	0.00	0.10
40	0.09	0.00	0.00	0.09	0.03	0.09	0.00	0.12	0.03	0.09	0.00	0.12	0.02	0.03	0.00	0.05
42	0.02	0.10	0.00	0.13	0.00	0.18	0.00	0.18	0.00	0.07	0.00	0.07	0.02	0.01	0.00	0.03
44	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.07	0.00	0.07	0.00	0.04	0.00	0.04
46	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.06	0.00	0.06
48	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
50	0.02	0.00	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
52	0.00	0.05	0.00	0.05	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
60	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Total	1.52	2.08	0.05	3.66	1.39	2.47	0.68	4.54	1.36	2.31	0.09	3.76	1.21	1.62	0.14	2.97
Nº samples:				15				17				32				22
Nº Ind.:	57	70	2	129	70	101	20	191	113	198	8	319	106	139	13	258
Sampled catch:				25				38				64				46
Range:				7-61				7-53				8-60				9-54
Total catch:				25				38				64				46
Total valid hauls:				39				50				100				94

TABLE 18- Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2008-2011 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2008				2009				2010				2011			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
6	0.00	0.00	0.02	0.02	0.00	0.00	0.07	0.07	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00
8	0.00	0.01	0.22	0.23	0.00	0.00	0.07	0.07	0.00	0.00	0.18	0.18	0.00	0.01	0.06	0.07
10	0.03	0.01	0.08	0.12	0.00	0.00	0.01	0.01	0.00	0.02	0.04	0.06	0.00	0.00	0.04	0.04
12	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02
14	0.07	0.12	0.04	0.23	0.03	0.05	0.00	0.08	0.06	0.06	0.02	0.15	0.03	0.03	0.00	0.06
16	0.11	0.10	0.02	0.23	0.03	0.04	0.00	0.07	0.05	0.05	0.00	0.10	0.04	0.02	0.00	0.06
18	0.17	0.20	0.00	0.37	0.04	0.05	0.00	0.09	0.00	0.03	0.01	0.04	0.07	0.03	0.00	0.11
20	0.05	0.08	0.00	0.13	0.01	0.07	0.00	0.08	0.03	0.05	0.00	0.08	0.06	0.03	0.00	0.09
22	0.15	0.10	0.00	0.25	0.11	0.10	0.00	0.21	0.10	0.09	0.00	0.19	0.08	0.09	0.00	0.17
24	0.11	0.11	0.00	0.23	0.07	0.15	0.00	0.22	0.13	0.19	0.00	0.33	0.04	0.06	0.00	0.10
26	0.13	0.08	0.00	0.21	0.07	0.10	0.00	0.17	0.15	0.12	0.00	0.27	0.07	0.09	0.00	0.16
28	0.29	0.32	0.00	0.61	0.07	0.16	0.00	0.23	0.30	0.24	0.00	0.55	0.07	0.20	0.00	0.27
30	0.09	0.15	0.00	0.24	0.15	0.15	0.00	0.30	0.34	0.24	0.00	0.58	0.19	0.19	0.00	0.38
32	0.14	0.14	0.00	0.29	0.23	0.16	0.00	0.40	0.12	0.21	0.00	0.32	0.16	0.14	0.00	0.30
34	0.06	0.09	0.00	0.15	0.10	0.16	0.00	0.26	0.08	0.23	0.00	0.31	0.07	0.19	0.00	0.27
36	0.09	0.08	0.00	0.16	0.05	0.15	0.00	0.20	0.11	0.23	0.00	0.33	0.03	0.09	0.00	0.12
38	0.04	0.17	0.00	0.21	0.08	0.12	0.00	0.20	0.10	0.17	0.00	0.27	0.05	0.20	0.00	0.25
40	0.04	0.11	0.00	0.15	0.02	0.13	0.00	0.15	0.10	0.27	0.00	0.37	0.04	0.16	0.00	0.20
42	0.01	0.11	0.00	0.12	0.01	0.14	0.00	0.15	0.02	0.16	0.00	0.18	0.03	0.15	0.00	0.18
44	0.00	0.06	0.00	0.06	0.01	0.04	0.00	0.05	0.00	0.11	0.00	0.11	0.00	0.19	0.00	0.19
46	0.00	0.12	0.00	0.12	0.00	0.10	0.00	0.10	0.00	0.07	0.00	0.07	0.00	0.07	0.00	0.07
48	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03
50	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04
54	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.59	2.19	0.38	4.16	1.11	1.93	0.15	3.18	1.69	2.65	0.28	4.62	1.04	2.03	0.10	3.17
Nº samples:				36				28				35				29
Nº Ind.:	159	223	37	419	110	193	13	316	169	272	25	466	103	206	10	319
Sampled catch:				83				80				123				92
Range:				7-54				6-50				6-55				8-53
Total catch:				83				80				123				92
Total valid hauls:				100				98				97				89

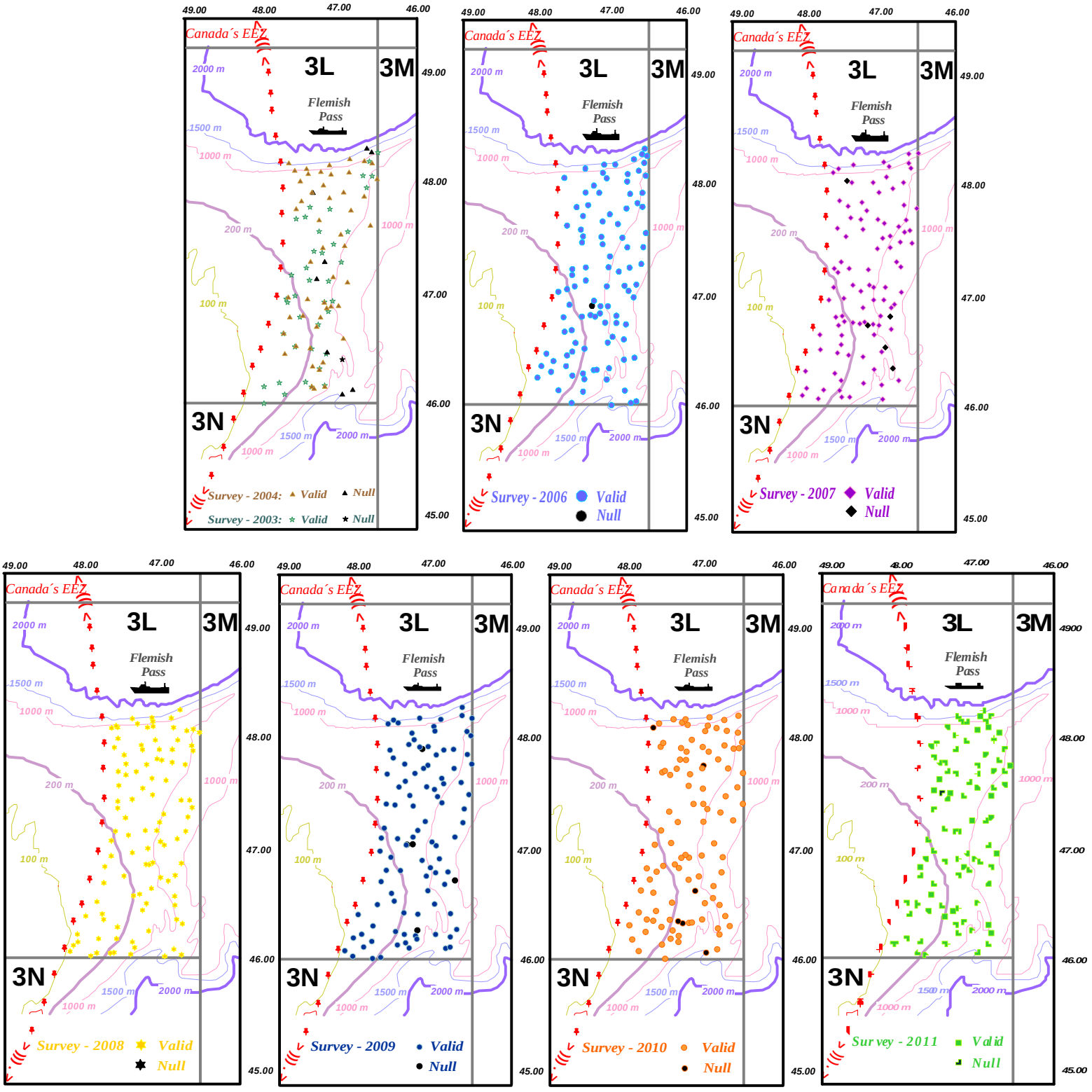


FIGURE 1.- Haul positions of the Spanish surveys in NAFO Division 3L in the period 2003 - 2011 (R/V *"Vizconde de Eza"*).

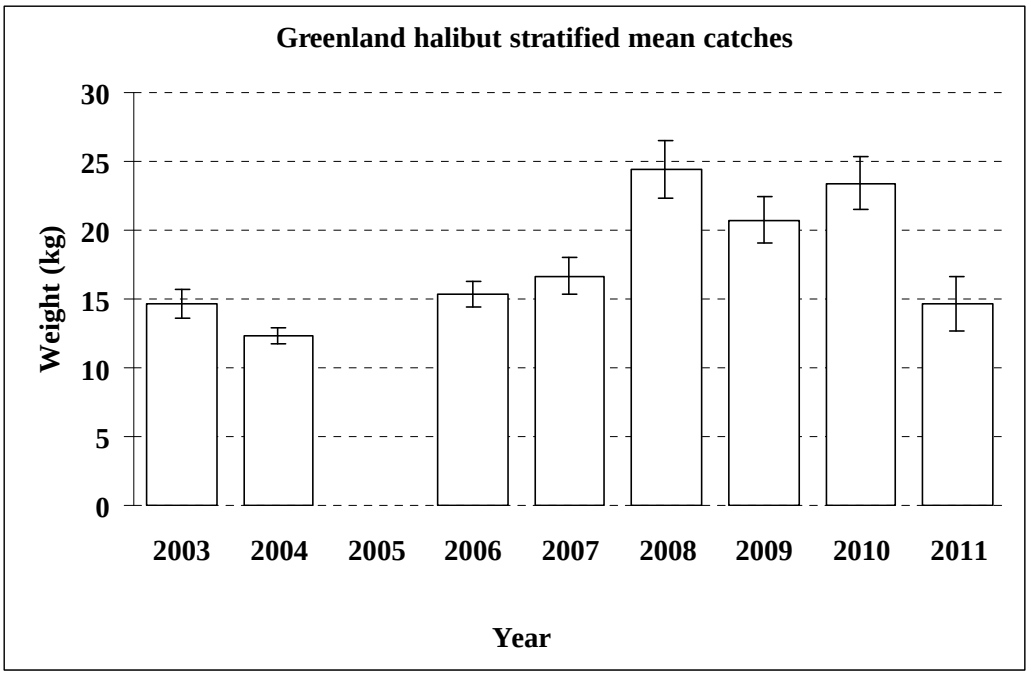


FIGURE 2.- Greenland halibut stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

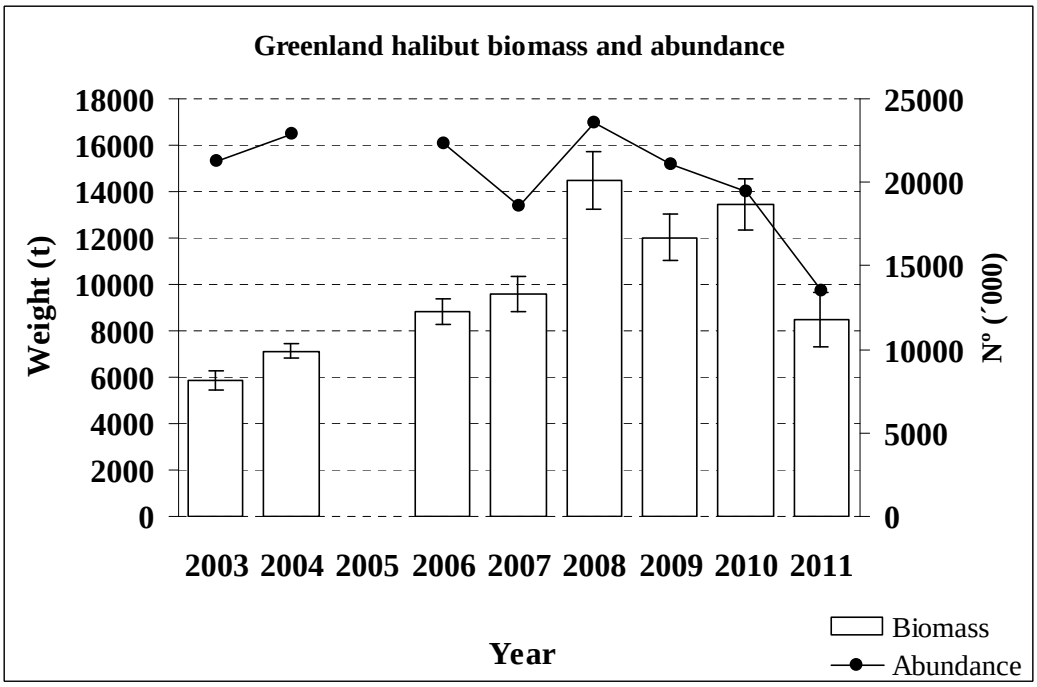


FIGURE 3.- Greenland halibut abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

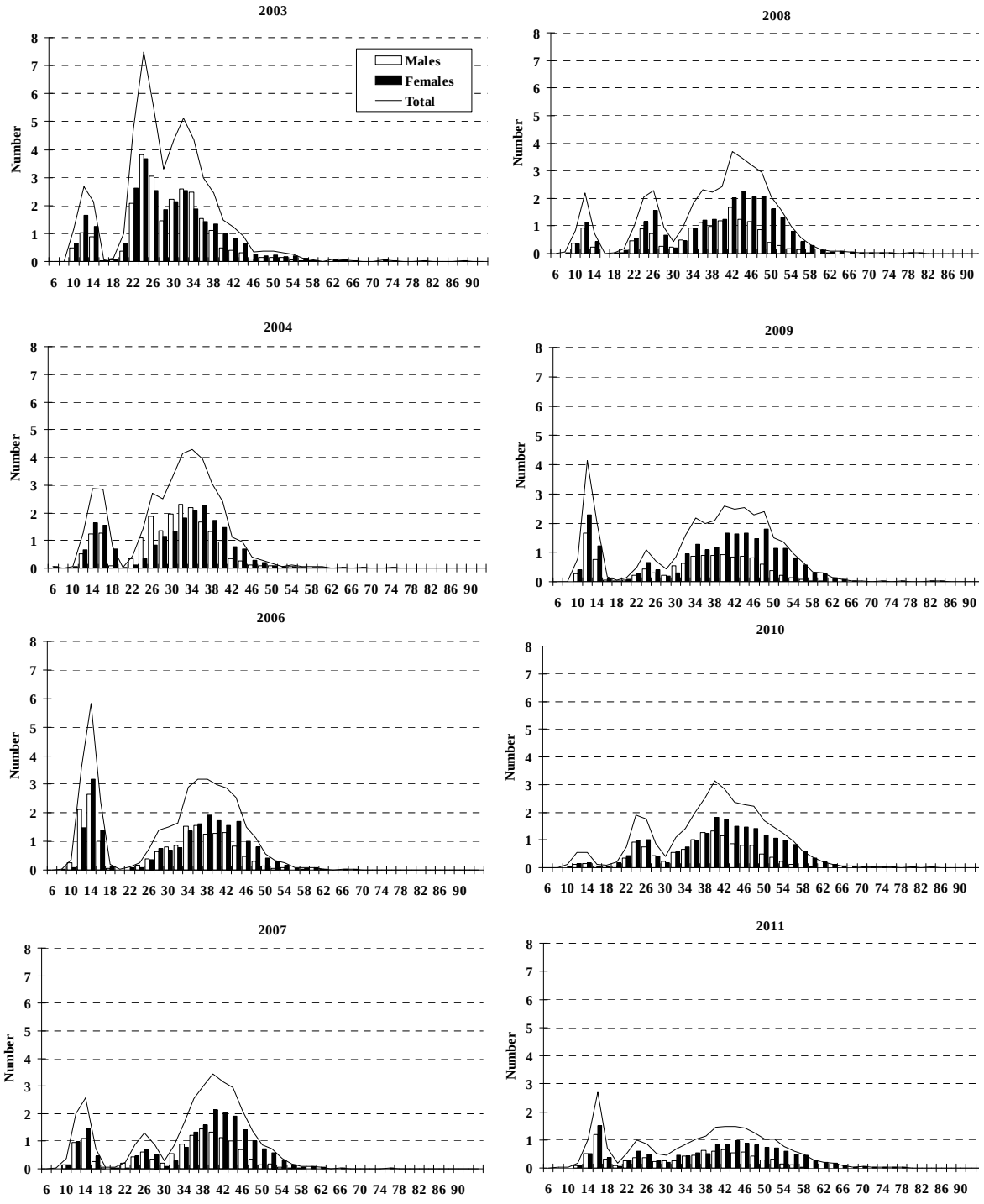
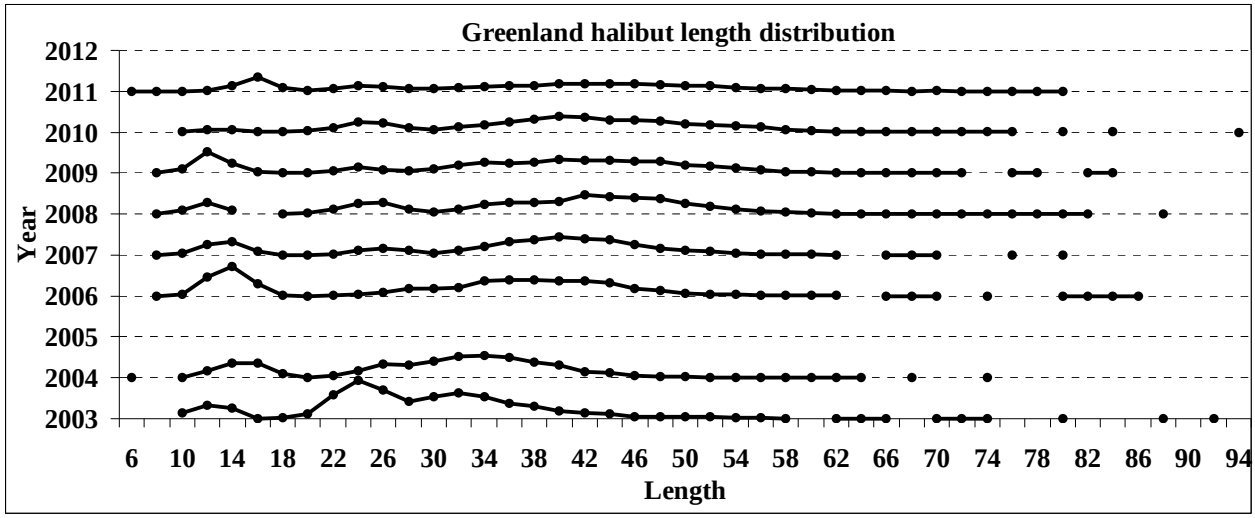
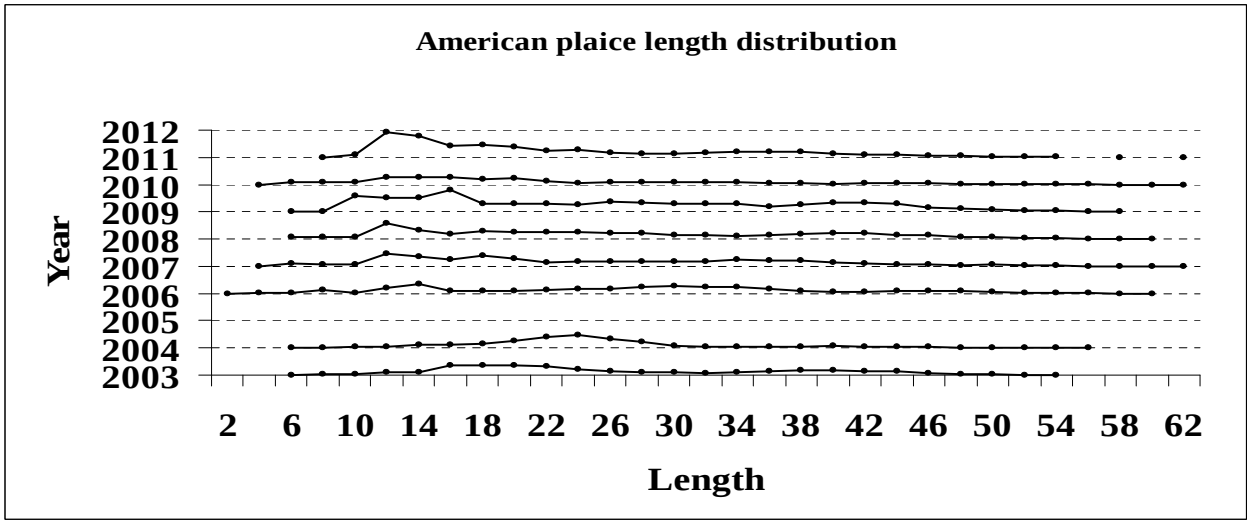


FIGURE 4.- Greenland halibut length distribution (cm) in NAFO 3L: 2003-2011. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.





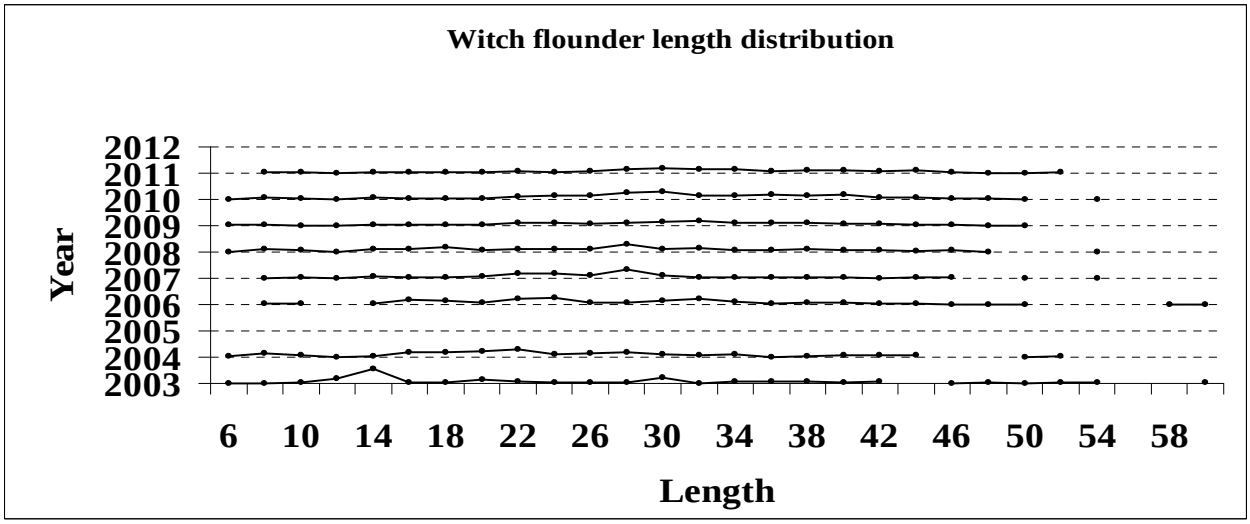


FIGURE 5.- Greenland halibut, American plaice and **witch flounder** length distribution (cm) in NAFO 3L: 2003-2011.

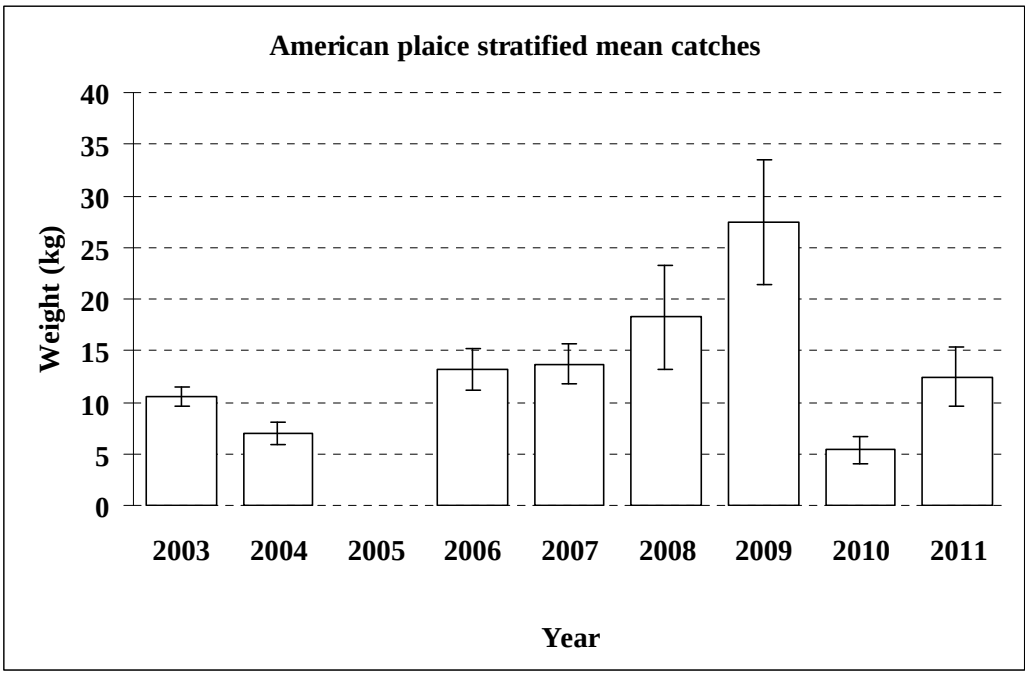


FIGURE 6.- American plaice stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

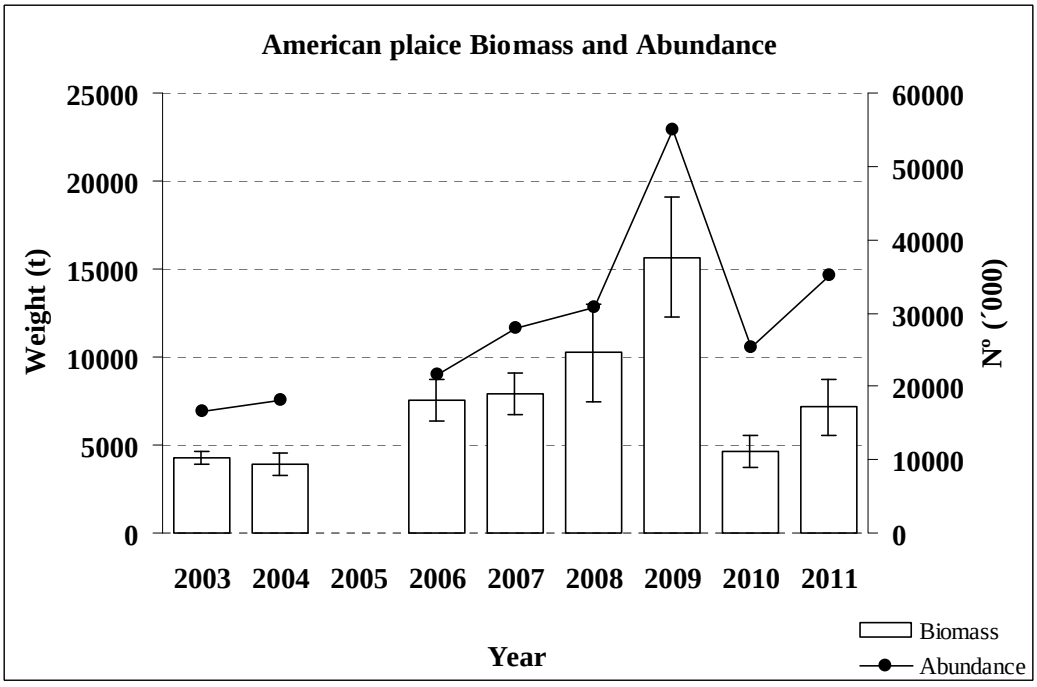


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FIGURE 7.- American plaice abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

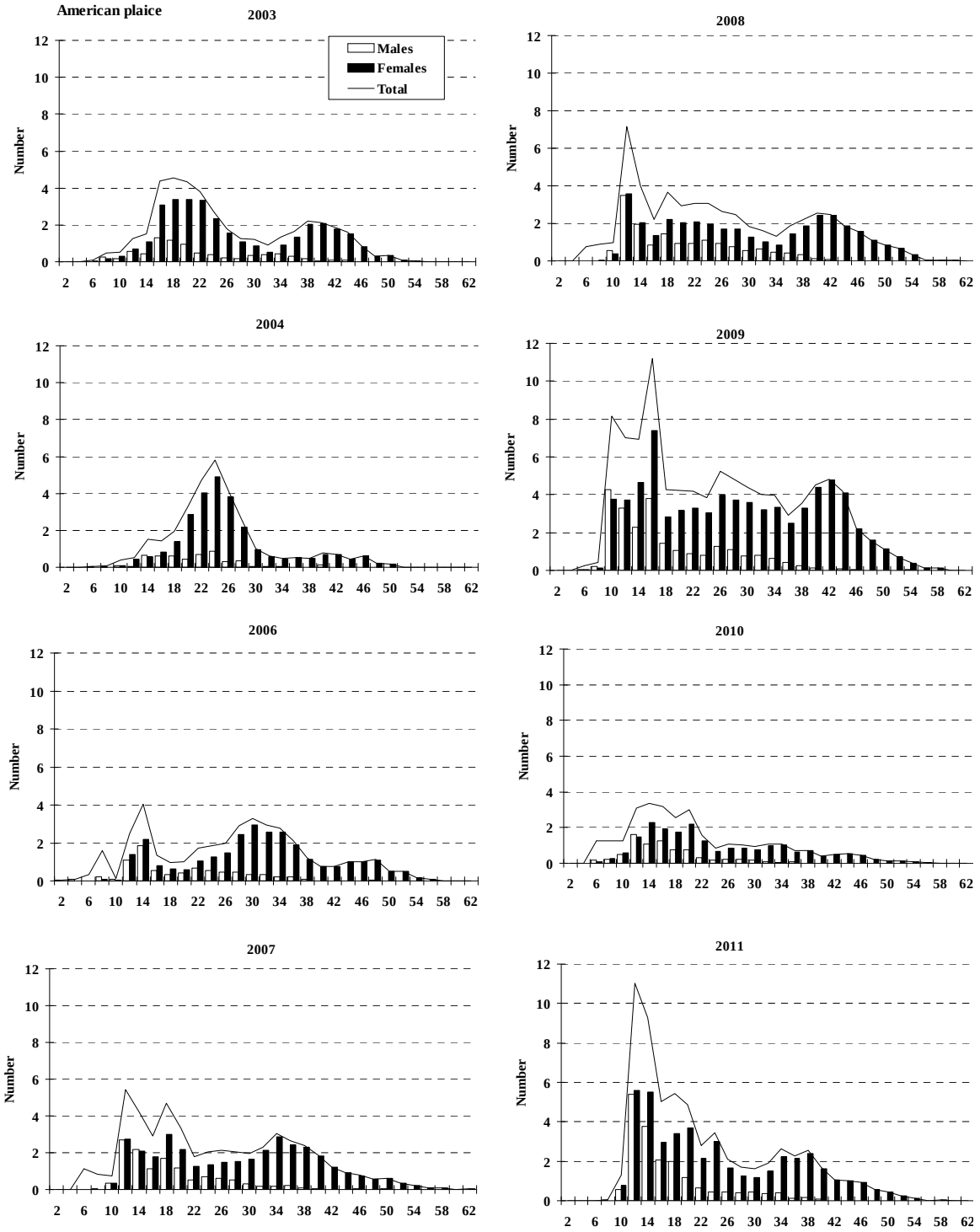

FIGURE 8.- American plaice length distribution (cm) in NAFO 3L: 2003-2011. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

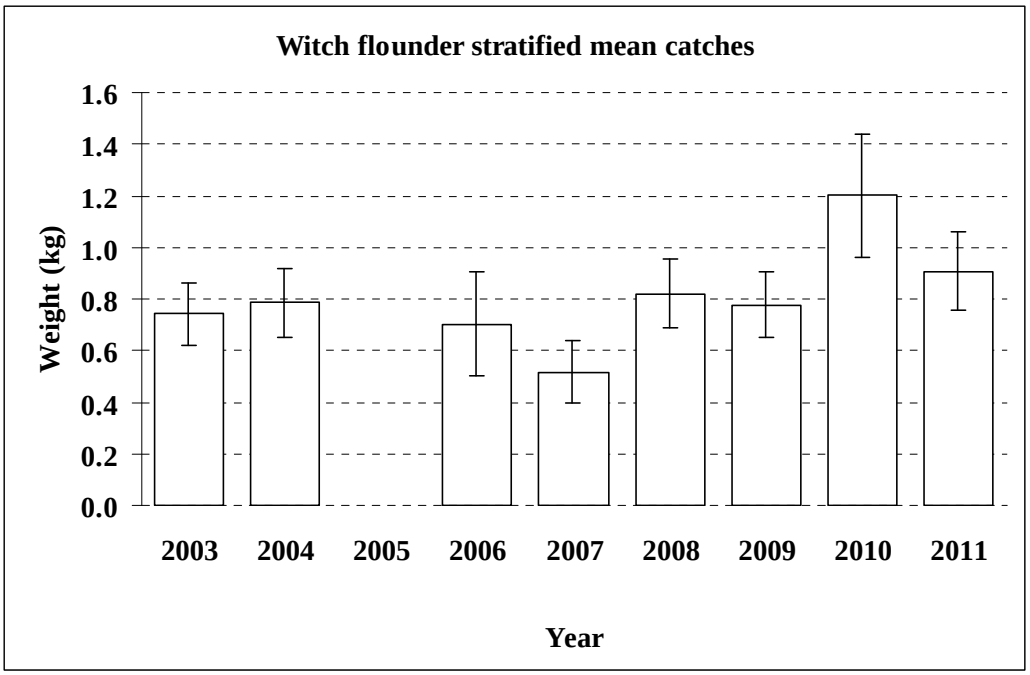

FIGURE 9.- Witch flounder stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

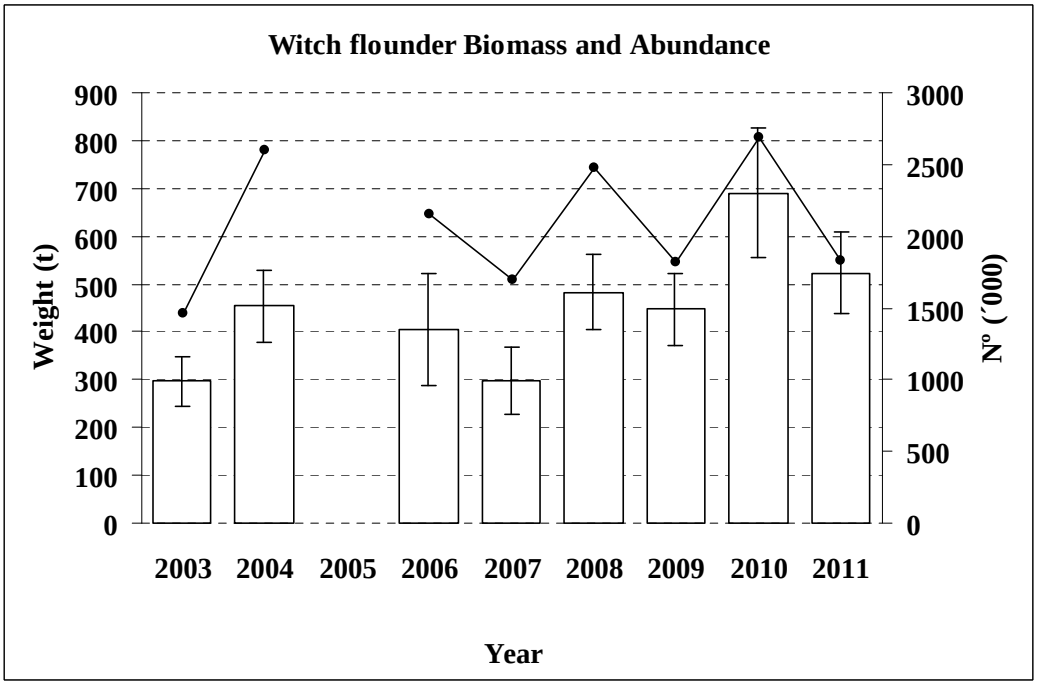

FIGURE 10.- Witch flounder abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2011 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2011.

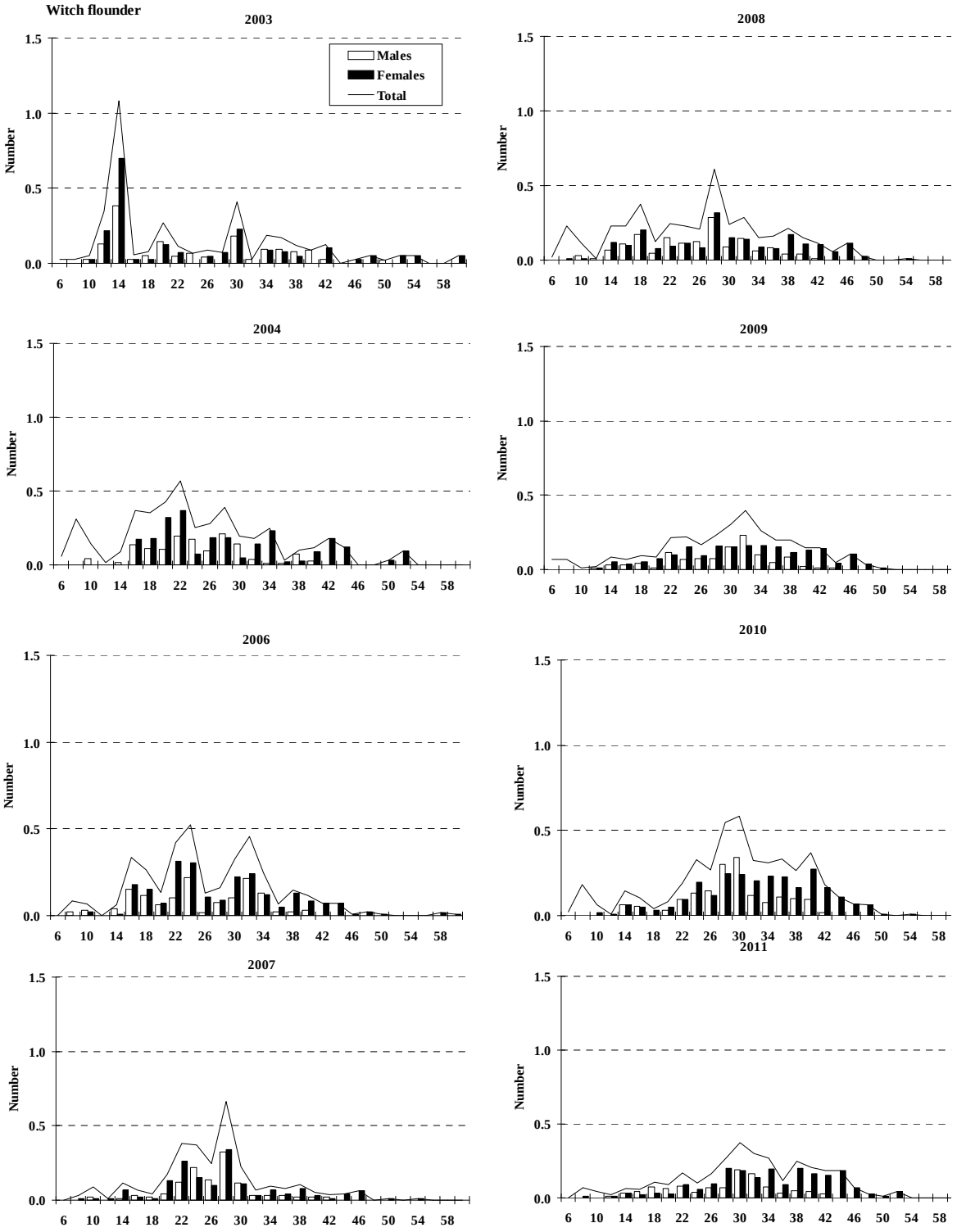

FIGURE 11.- Witch flounder length distribution (cm) in NAFO 3L: 2003-2011. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2011.